Scanning the Internet | PRO-60 Hand Held | FCC License Updates

U.S. Scanner News

A Magazine for the Scanner Hobbyist

Volume 8, Number 10 – October 1995

U.S. $2.50, Canada $4.95

Printed in the USA

The Sky Scan Disk 1300 Antenna

SARSAT – Search & Rescue

OPTO Scout 40 Review

**********3-DIGIT 980
10-95-08-88-207 - SUB
KEITH SAVORY
3702 203 PL SW
LYNNWOOD WA 98036-9129

Bulk Rate
U.S. Postage
Paid
Permit #988
Portland, OR

Bear
548-6405

AOR®

THE NEW CONCEPT AR8000 RECEIVER

AOR has broken the mold of conventional radio receiver design! The AR8000 is a new breed of receiver, combining full computer compatibility with advanced wide-band receiver technology. The opening welcome message on the AR8000's multi-function liquid crystal display "WELCOME TO THE WORLD OF AR8000 RECEIVER" immediately deomonstrates to the new user and discerning radio listener that the AR8000 is no ordinary radio but, THE NEW CONCEPT in radio design.

- **Wide coverage 500kHz to 1900MHz**
- **Programmable tuning steps (minimum 50kHz)**
- **All-mode reception AM, USB LSB, CW, NFM,WTM**
- **True carrier re-insertion USB, LSB &CW**
- **Separate 2.4kHz SSB filter**
- **1000 mem channels (50ch x 20 banks)**
- **SCAN/SEARCH speed of 30 channels/sec**
- **Comprehensive SCAN methods (i.e. Delay Scan, Audio Scan, Free etc.)**
- **Wide variety of SEARCH method (Delay Search, Audio Search etc.)**
- **Simultaneous Dual VFO indication**
- **NEWUSER & EXPERT configurations**
- **Connection for computer control**
- **Spectrum type display for band occupancy (BANDSCOPE)®**
- **Dot-matrix LCD which will allow alphanumeric display**
- **Supplied helical whip aerial ant., NiCads & charger**

EDCO **PHONE:703-938-8105**

AR3000A

Widest coverage on the market today with a high level of performance and versatility from long wave thru shortwave, VHF and onward to the upper limits of UHF and VHF! Uses 15 band pass filters before the GaAs-FET RF amplifiers unlike other receivers which may rely largely on broad band amplifiers. High sensitivity through the entire coverage with outstanding dynamic range and freedom from intermodulation effects.

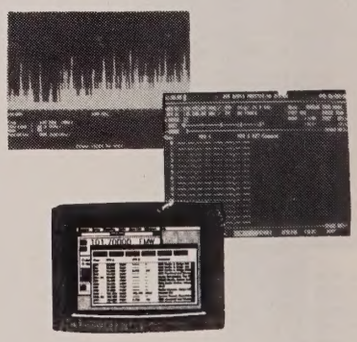
Frequency: 100kHz-2036MHz
Mode: USB, LSB, CW, AM, FMN, FMW
Circuitry: Triple (USB/LSB/CW/AM/FMN) and Quadruple (FMW) conversion superheterodyne
Memories: 400 (4 banks/100 channels)
Scan Rate: 50 ch/sec.
Search Rate: 50 steps/sec
Sensitivity(μV): 2.5-1800MHz CW, SSB .25/AM1.0/FMN .35/FMW 3.0
Selectivity: SSB,CW 2.4kHz/ AM,FMN 12kHz FMW 180kHz
Power: 13.8VDC, <.5A max audio, AC adapt. incl.
Size: 5.5"W x 3.5"H x 7.9"D 2.6 lbs.

Distributed by...
Electronic Distributors
325 Mill St. Vienna, Va., 22180

WINDOWS SOFTWARE FOR THE AR3000A

The latest AOR software for IBM and compatibles control of the AR3000A, using the computer's RS232 serial port. SEARCHLIGHT makes full use of the Graphical User Interface (GUI) and is a genuine *Windows* program. Uses MDI and CUA (Common User Access) specs for ease of use and a standard "look and feel". DEMO disk is available, running full functions for 10 minute session.

- **Microsoft Windows Program** - foreground and background
- **On-line help** - *Windows* hypertext provides information you need, also dialogues have "help" function
- **Fully supported *Windows* Sound Recording** - Correctly configured compatible sound card allows recording from your receiver while scanning or analyzing frequencies. A log contains all the recordings for replay.
- **Unlimited number of disk based memory banks** - Each memory banks contains 400 memory channels and can be uploaded or downloaded to and from the receiver. Up to 10 banks may be viewed on-screen at once and an unlimited number may be stored to disk (restricted by your space).
- **Copy date to & from clipboard** Bulk editing and export data base (not supplied) or other *Window* applications.
- **Memory scan and Programmable Band Scan** - Provides a histogram display showing the activity of each channel. Full control is provided including a cursor indicator and sound recording (optional).



FAX 703 - 938 - 4525 EDCO

EXCLUSIVE DISTRIBUTOR THROUGHOUT THE U.S., CANADA, AND SOUTH AMERICA. CALL EDCO FOR YOUR NEAREST DEALER.

Editorial Staff

Owner/Publisher
Ken Gilbert

Managing Editor
Bob Gehri

Editorial Staff

Antennas	Clem Small
Aircraft	Roger West
Beginners Corner	Michael Martin
Books and Stuff	L. J. Smith
FCC Information	George DuBois
Frequency Forum	O.E. Simonson
Public Safety	Ed Muro
Satellites	Donald Dickerson
Technical Topics	Steve Donnell
Text Editor	tracy
Layout	Bob Gehri
Logistics	Paul Weigel

U.S. Scanner Publications
Editorial Offices
P.O. Box 14923
Portland, Oregon 97214
1-503-230-6999
FAX 1-503-233-5176
Subscription Services
1-503-234-1945
InterNet - USSN@Pacifier.com
FidoNet - 1:105/180 (USSN)

Notice: The contents of U.S. Scanner News are protected under the copyright laws of the United States of America. Reproduction in whole, without written permission of the publisher, is prohibited. However, short excerpts may be reprinted with appropriate credit.

U.S. SCANNER NEWS (ISSN 1048-9908) is published monthly for $18 per year by U.S. Scanner Publications, P.O. Box 14923 , Portland, OR 97214.

Although U.S. Scanner News encourages writer submissions, we can assume no responsibility for loss of unsolicited manuscripts, photographs, or drawings. U.S. Scanner News reserves the right to reprint articles in U.S. Scanner News and make them available for sale as excerpts and reprints.

Allow six weeks for change of address or delivery of first issue. Printed in the U.S.A.

POSTMASTER: Send change of address to U.S. Scanner Publications, P.O. Box 14923, Portland, OR 97214.

Copyright © 1995

USSN - Contents

2 *Editorial*
Scanning Outlawed?

4 *Cover Story*
The Boeing 777

7 *Government* by Roger Cravens
Bureau of Alcohol, Tobacco, and Firearms (Part Two)

14 *Antennas For Today's Scanners* by W. Clem Small, KR6A
Feed Lines, Lead-ins and Transmission Lines

17 *Computers and Scanning* by Lonnie Gorsline
Scanning and the INTERNET

19 *The Scanner Man*
Priority Function

20 *The Other-Half* by Janet Cravens
Scanners Anonymous

22 *Product Review*
Sky Scan Desk 1300

23 *Transportation* by Roger West
State of Delaware

28 *Space Communications* by Donald E. Dickerson, N9CUE
SARSAT-Search & Rescue

30 *Technical Stuff* by Steve Donnell, WA1YKL
Opto Electronics Scout, Model 40

33 *Beginner's Corner* by Michael Martin
Listen, But Don't Go!

34 *Public Safety Communications* by Ed Muro
Department Profile

37 *Frequency Forum* by O.E. Simonson
July FCC Updates

50 *Product Review* by George DuBois
Pro 60 Handheld Scanner

53 *AOR AR-8000 (8K)* by R.L. Gehri
Expert Mode & Speeding Up The 8K

54 *FCC News*

Customer Input Manifested In Boeing 777 Flight Deck

Customer input is the compelling force behind the Boeing 777's market-driven design, and in few places is that more evident than the new airplane's flight deck. The 777 Flight Deck Engineering Simulator shows how the airplane has been designed in response to customer preferences. Based on the popular design of the Boeing 747-400, the horizontal layout of the flight deck makes it easier for pilots to obtain and respond to information while minimizing "heads-down" time. The bright colors and sharp images of the 777's flat-panel liquid crystal displays are a distinguishing feature of the new airplane's flight deck. The new-generation displays are easier to read in bright sunlight and use a larger display area, allowing multiple functions to be consolidated for quick pilot access. The 777's flight deck also can be updated to meet new operational needs without requiring major changes. When it enters service in 1995, market-driven design will have shaped the 777 into the preferred airplane in its class.

Photo - Boeing Commercial Airplane Group

EDITORIAL

by R.L. Gehri

Scanning Outlawed ?

Larry Gass of Tulsa, OK was recently convicted in United States District Court for the Northern District of Oklahoma for listening to the Tulsa Police Department's 800 MHz trunked system. Larry owns a local Security Patrol company and a helicopter company which rents helicopters to some of the local media.

The indictment handed down by the grand jury states that "The City of Tulsa did not authorize, and did not desire to have the tactical radio communications of the Tulsa Police Department intercepted and listened to by the public and the media. The city of Tulsa did by written agreement, authorize specific media businesses to intercept and listen to only the patrol channels of the Tulsa Police Department, Channels A, D and G, but none other."

First Assistant U.S. Attorney Scott Woodward pursued the case as a violation of Section 705 of the Communications Act of 1934 (Title 47, United States Code, Section 605(e)(4) and 605(a)). Mr. Woodward stated that this case depended on a strict interpretation of the law, more so than any he had prosecuted in the past.

To understand how the Communications Act was applied, one must first read the sections that were applied here.

47 USC Sec. 605
(a) Practices prohibited

Except as authorized by Chapter 119, Title 18, **no person receiving, assisting in receiving, transmitting, or assisting in transmitting, any interstate or foreign communication by wire or radio shall divulge or publish the existence, contents, substance, purport, effect, or meaning thereof, except through authorized channels of transmission or reception,** (1) to any person other than the addressee, his agent, or attorney, (2) to a person employed or authorized to forward such communication to its destination, (3) to proper accounting or distributing officers of the various communicating centers over which the communication may be passed, (4) to the master of a ship under whom he is serving, (5) in response to a subpoena issued by a court of competent jurisdiction, or (6) on demand of other lawful authority. No person not being authorized by the sender shall intercept any radio communication and divulge or publish the existence, contents, substance, purport, effect, or meaning of such intercepted communication to any person. No person not being entitled thereto shall receive or assist in receiving any interstate or foreign communication by radio and use such communication (or any information therein contained) for his own benefit or for the benefit of another not entitled thereto. No person having received any intercepted radio communication or having become acquainted with the contents, substance, purport, effect, or meaning of such communication (or any part thereof) knowing that such communication was intercepted, shall divulge or publish the existence, contents, substance, purport, effect, or meaning of such communication (or any part thereof) or use such communication (or any information therein contained) for his own benefit or for the benefit of another not entitled thereto. This section shall not apply to the receiving, divulging, publishing, or utilizing the contents of any radio communication which is transmitted by any station for the use of the general public, which relates to ships, aircraft, vehicles, or persons in distress, or which is transmitted by an amateur radio station operator or by a citizens band radio operator.

Section 605(e)(4)

Any person who manufactures, assembles, modifies, imports, exports, sells, or distributes any electronic, mechanical, or other device or equipment, knowing or having reason to know that the device or equipment is primarily of assistance in the unauthorized decryption of satellite cable programming, **or is intended for any other activity prohibited by subsection (a) of this section, shall be fined not more than $500,000 for each violation, or imprisoned for not more than 5 years for each violation, or both.** For purposes of all penalties and remedies established for violations of this paragraph, the prohibited activity established herein as it applies to each such device shall be deemed a separate violation.

I'm sorry if all of that seems confusing, but that's why the lawyers go to school for so long. Let's see if we can simplify it somewhat. First, one thing that hasn't been mentioned as of yet is that the offense involved two-way radios made by Motorola and Standard Communications, not scanners. I don't see where that makes any difference, but the court seemed to. A press release by the City of Tulsa, Radio Service Division, explains their side of this case:

CITY OF TULSA VS. GASS AND ASTACIO

TULSA, OK -- On July 28, 1995, a federal jury in Tulsa, OK convicted Larry Nathan Gass on all counts charged of illegally modifying and selling two-way radios capable of intercepting the communications of the City of Tulsa.

In April 1995, a grand jury returned a 27-count indictment against Gass, 50, and Jon David Astacio, 42. Both were charged under 18 USC Section 371 Conspiracy, 47 USC Subsection 605(e)4 and 605(a), Sale or Modification of a Device Intended for Unauthorized Interception and Publication of Radio Communications, and 18 USC Section 2, Causing a Criminal Act.

The essence of these statutes is that it is illegal for a person, if not authorized by the sender, to intercept any radio communications and then divulge the existence, contents, substance, purport, effect or meaning of such intercepted communication to any person. Court rulings in related cases hold that by listening to such a device one has divulged the contents of the conversation "to yourself," fulfilling that element of the crime. Other elements of the statute include modifying or selling a device that accomplishes the above. The indictment alleged that Gass and Astacio, acting both in conspiracy and individually, violated Federal law by modifying and selling Motorola and Standard brand two-way radios capable of accessing the Motorola trunking radio system operated by the City of Tulsa. The modification were performed with proprietary and copyrighted software not distributed to the public.
Under an agreement with Federal prosecutors, Astacio, now of New York, pled guilty to three felony charges and testified at Gass' trial.

Astacio's sentencing is set for later this month, and Gass is to appear before U.S. District Court Senior Judge H. Dale Cook for

sentencing on October 18, 1995. He faces up to 85 years in prison and up to $4.25 million in fines.

The convictions culminated a 16-month investigation by the Tulsa Police Department's Internal Affairs Division. Evidence was recovered during an August 1994 search warrant served at the offices of Tulsa Security Patrol and Action Helicopter Services, both owned by Gass. Other evidence was recovered by subpoena and search warrant from Gass' customers, which included major media outlets in Tulsa.

This ground-breaking case was the first use of these statutes in a case involving a trunking radio system. First Assistant U.S. Attorney Scott Woodward let [sic] the prosecution team and stated that he spent an "enormous amount of time briefing the case" and asked attorneys in three different sections of the U.S. Department of Justice to research various issues before deciding to proceed against Gass.

During the trial, Gass' attorneys tried many times to introduce evidence that simple scanners were capable of intercepting, at least partially, the communications of a trunking radio system. Most of these attempts were rebuffed by the judge, as no scanners were involved in the case, only trunking radios.

A scanner, of course, is programmed with frequency numbers, while a trunking radio must be programmed with confidential alphanumeric codes not available to the public through legal means.

Following the verdicts, Gass stated to the Tulsa World reporter Julie DelCour, "Whatever it takes and as long as it takes, this definitely will be appealed because we think the people have a right to know what their police are doing."

Internal Affairs Sgt. Rod Hummel states, "The Tulsa Police Department has always been open with the media. But we have made it clear to them what channels we allow them real-time access. We restrict their access to certain talk groups for the safety of our officers and so that certain operations are not disrupted while in progress.

"Media members testified in court that they knew that the City of Tulsa and the Police Department made it clear what conversations could be monitored. They also testified their stations could not be competitive with scanners if their competitors had cloned, trunking radios.

I find it interesting that Mr. Gass' defense team kept trying to introduce evidence that had to do with scanners. This case has never been about scanners and none were seized or introduced as evidence. If scanners are so effective, why would Gass' customers pay over $1 000 per cloned radio to hear what they claim could be monitored with a $100 scanner?

"Undisputed testimony was given at trial that Mr. Gauss [sic] attempted to place an agent of his into the City's Electronic Maintenance Facility, posing as an alarm technician, in an attempt to gain the proprietary codes needed to program radios.

"I believe Mr. Gass would be upset - and rightfully so - if someone obtained the codes for a cellular phone that he uses and then programmed those codes into a device that would allow full access to his conversations. That wouldn't be right, and would be a breach of his privacy. Evidently Mr. Gass things [sic] that if you work for the government you have no right of privacy."

The problem I am having with this is that since there is now case law on the books that makes it illegal to listen to or reprogram a trunked radio to follow a talk group, the next prosecutor will use this to make his case about someone listening to a trunking system on a scanner. This may seem like a big step, but one of the cases that the prosecutor used to set his case was the one that HBO won in 1984, dealing with the reception of satellite communications.

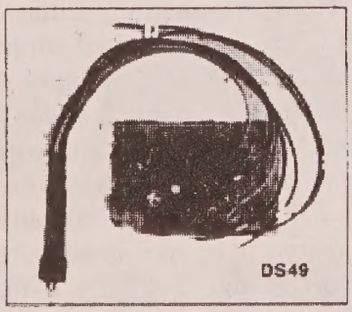
The Communications Act of 1934 was written with as much forethought as possible. The meaning of the Privacy provision has always been that it is all right to listen, but not to reveal what you hear. Little by little, the courts have been chipping away at it until it has no meaning whatsoever. I can only hope that Mr. Glass will take this case to as high a court as he can until it is overruled. That is the only way we will be able to retain our right to listen to our public officials, on systems purchased with public money. Remember, a right can't be taken away and a police department operating in secret is a department that could become more than a police department.

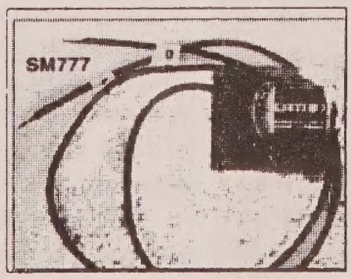
USSN

SURVEILLANCE
& COUNTERSURVEILLANCE Electronic Devices
Hidden Video Cameras • Electronic Kits • Voice Changers
Bug and Phone Tap Detectors • Shotgun Mics • Micro Recorders
• Vehicle Tracking • Locksmithing • AND MORE!
Extra Long Play Telephone Recorders - Silently Tapes Incoming/Outgoing Phone calls automatically... $125.00 and up
SPY OUTLET FOR CATALOG SEND $5.00 TO...P.O. Box 337, Buffalo, NY 14226 (716) 691-3476 - (716) 695-8660

SATELLITE RADIO BOOK & GUIDE
NEW BOOK covers all Audio Services, SCPC, Subcarriers, FM², Facsimile, Press Services, Weather Services. Simple how-to-receive instructions. SATELLITE RADIO GUIDE INCLUDED.
$16.95 plus $3 Priority Mail ($19.95 total)
UNIVERSAL ELECTRONICS, INC.
4555 Groves Road, Suite 12
Columbus, OH 43232 (614) 866-4605

QUALITY SCANNING KITS FROM CTP





The DS49 is a frequency inversion voice de-scrambler/scrambler and is guaranteed to de-scramble standard frequency inversion schemes used in new cordless telephones as well as some public service/industrial communication systems. It also de-scrambles variable split band, and some rolling frequency inversion schemes! Only four quick solder connections to any receiver are needed and +12 VDC power source inside the radio is required. The DS49 measures approx. 1.95" x 2.6", and fits easily into most mobile/base scanners! This product , when assembled, is lawful only for use within a scrambled system or with court authorization.
DS49 . . . . . $49.95 + $3.00 S/H

The SM777 measures only 1" x 1", utilizes a PC mount meter that measures only .46" x .44"l, and weighs only .4 ounces. You can now add an S/meter to your PRO-2004/5/6, 2022, 2021, 2020, 2003, 2002, and PRO-34, 32, as well as your BC-200/205 XLT, 950 XLT, and HX-1000, or any scanner where a positive AGC voltage can be found! Only two solder connections are needed. The SM777 is excellent for "fox-hunting" and determining which signal source is closer!
SM777 . . . . . $49.95 + $3.00 S/H

CTP
517 Lower Terr.
Huntington, WV 25705
(304) 525-6372
(800) 660-1118

COVER STORY

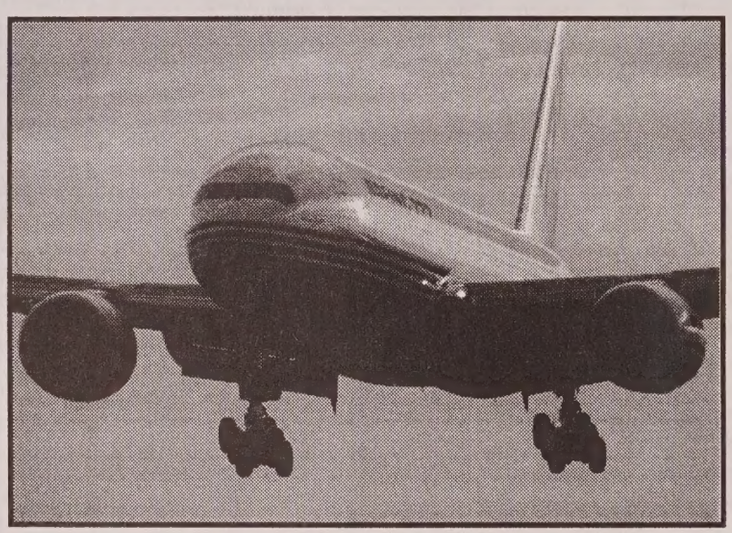
by Roger West

The New Boeing 777 Commercial Airliner

The Boeing Aircraft Company

The Boeing Aircraft Company has played an important function in United States aviation history. Boeing Aircraft has designed and built many aircraft, both civilian and military, since 1916, and has made important contributions to our space program by building the first stage of the Saturn V Rocket and by construction of the Lunar Roving Vehicle, which was a wire-wheeled, battery-powered vehicle used by Apollo 15, 16, and 17 astronauts to explore the Moon's surface at greater distances than previously possible.

The Boeing Company is headquartered in Seattle, Washington and is a leading producer of commercial aircraft, and is the State of Washington's largest employer, with plants in Seattle, Everett, Auburn, Kent, and Renton, as well as many other cities across the nation.



The company was founded by William Edward Boeing who was a pioneer in the United States aircraft industry. After studying at Yale University's Sheffield Scientific School, William Boeing entered his father's lumber business in Seattle. In 1916 he switched to the manufacture of airplanes by founding the Pacific Aero Products Company, which later became the Boeing Airplane Company. He helped design the company's first plane, a two-seat seaplane for the United States Navy, the forerunner of a long line of military and commercial aircraft. In 1927 he also founded Boeing Air Transport, which, through a merger, later became United Air Lines.

Today, the Boeing Company is once again making aviation history with the designing and manufacturing of the Boeing 777 commercial airliner.

Market demand has sized, shaped and launched the newest member of the Boeing family, the Boeing 777. The airplane design offers features, innovations and approaches to aircraft development that set the standard for delivering value to airlines. The 777 - the world's largest twinjet - is available in three models: a 777-200 initial model; a 777-720 increased-range model; and a larger 777-300 model.

Initially, United, ANA, British Airways, Japan Airlines and Cathay Pacific were among a number of carriers with whom Boeing held intensive discussions, including many group sessions, to define and develop the new airplane's configuration. The participating airlines represented a full range of operations in terms of route structure, traffic loads, service frequency and climate. Their input to the design process helped ensure that the final product would have the broadest possible application to the needs of the world's airlines.

In every respect, the 777 design responds to market needs and customer preferences. The result is an airplane offering cabin spaciousness and flexibility found in no other jetliner as well as many features that enhance reliability and productivity. The 777 provides the most payload, range capability and growth potential in the medium-size aircraft category.

Many items traditionally offered as optional or special-request features on other airplanes are standard equipment on the 777, including satellite-communication and global-positioning systems.

The Boeing 777 wing uses the most aerodynamically efficient airfoil ever developed for subsonic commercial aviation. A refinement of designs introduced on the 767 features a long wingspan with increased thickness while achieving higher cruise speeds. This advanced wing enhances the airplane's ability to climb quickly and cruise at higher altitudes. It also allows the airplane to carry full passenger payloads out of many high-elevation, high-temperature airfields.

Fuel volume requirements for the 777 are accommodated entirely within the wing and structural center sections. For the initial airplane, fuel capacity is 31,000 gallons, while the longer-range model will carry up to 44,700 gallons. Airlines helping to design the Boeing 777 encouraged the company to commit to the performance capabilities of an optimum wing, which has a span of 199 feet, 11 inches. However, for ground operations, some carriers wanted the 777's wing to take up no more space than the wings of DC-10's, L-1011's and 767's, so that the new airplane could fit into existing gate and taxiway space at crowded airports. The solution is an optional feature that will introduce to commercial aviation a concept that has been common on Naval aircraft for decades. A hinge and actuation mechanism will enable about 22 feet of each wingtip to fold upward, reducing the wingspan to about 155 feet when the airplane is on the ground.

The three leading engine manufacturers, Pratt & Whitney, General Electric, and Rolls Royce, developed more efficient

and quieter turbofans to power the 777.

New, lightweight, cost-effective structural materials are used in several 777 applications. For example, an improved aluminum alloy is used in the upper wing skin and stringers. Known as 7055, this alloy offers greater compression strength than current alloys, enabling designers to save weight and also improve corrosion and fatigue resistance.

The layout of the Boeing 777 flight deck is in a horizontal format, and principal flight, navigation and engine information is presented on six large display screens. The depth of the new "flat displays" are about half that of Cathode Ray Tubes. Pilots appreciate the flat panel displays, as they remain clearly visible in all conditions. Installed in the center-aisle stand, three multipurpose control display units, or CDU's, provide data display and entry capabilities for flight management functions and are the primary interface with an integrated Airplane Information Management System, known as AIMS. The CDU's have color displays, which allow pilots to assimilate the information more quickly.

A key part of the 777 systems is a Boeing-patented two-way digital data bus, which has been adopted as a new industry standard: ARINC 629. It allows airplane systems and their computers to communicate with one another through a common wire path, instead of separate one-way wire connections. There are 11 of these ARINC 629 pathways in the 777.

In addition to being one of the most spacious passenger cabins ever developed, the 777 interior offers operators unsurpassed configuration flexibility. For improved in-flight service, the 777 is equipped with an advanced cabin-management system which is linked to a computerized control console.

Each of the nine airplanes involved in the 777 flight-test effort will have a primary pilot assigned, plus two backups. The first of the Boeing 777 Commercial Airliners was delivered to United Airlines in May of 1995.

I had the pleasant opportunity to view a film on the design and manufacturing of the new Boeing 777, and I much admit, I was very impressed, and I am looking forward to a flight aboard one of these aircraft.

The following is a nationwide list of frequencies licensed to the Boeing Aircraft Company:

ALABAMA
HUNTSVILLE
General Operations
853.4875,856.3875, 857.3875, 858.3875

CALIFORNIA
SUNNYVALE
Manufacturing operations
462.2875, 462.4250, 462.4375, 467.3375

VANDENBERG AIR FORCE BASE
Manufacturing operations 462.3000

DELAWARE
NEW CASTLE COUNTY
Flight tests 123.200
123.250, 123.400, 123.475, 123.525, 123.550

GEORGIA
FOREST PARK
General operations 855.3625
MACON
Manufacturing operations 153.050
153.125, 153.200, 153.380

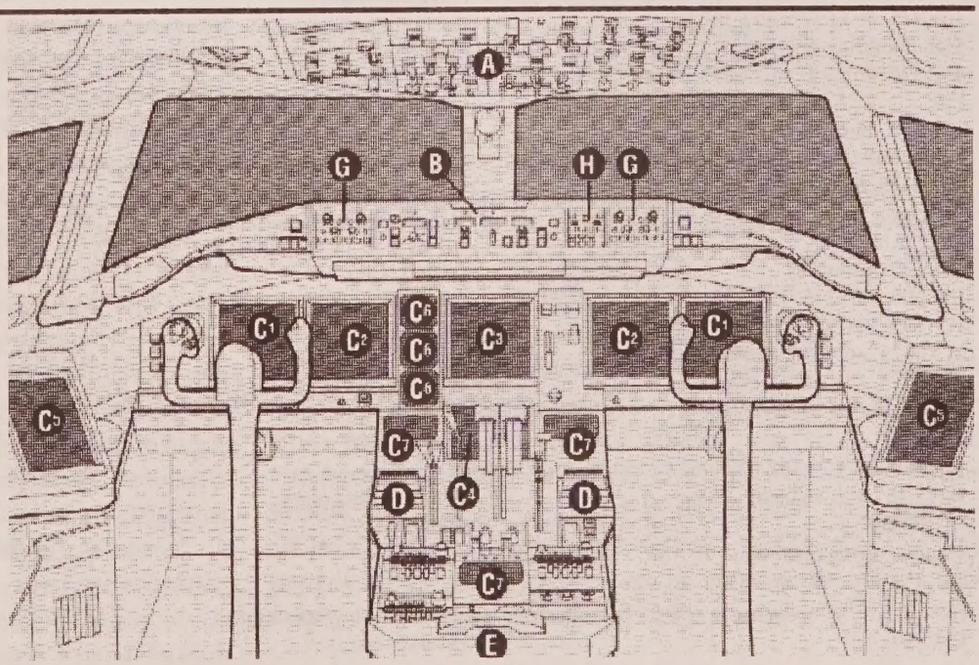
KANSAS
WICHITA
Fire - 154.250, 154.295
General operations - 460.650, 460.750, 460.80
460.850, 854.9125, 856.3375, 856.3625,
857.3375, 857.3625, 858.3375, 858.3625,
859.3375, 859.3625, 860.3375, 860.3625,
854.9125, 855.4125, 860.3125,
Manufacturing operations 153.200
462.450, 462.500
Fixed 929.0125, 952.
954.8500, 957.8500, 958.4500,
Flight tests 123.200
123.325, 123.350

LOUISIANA
LAKE CHARLES
General operations 468.3875
468.4625, 468.5375, 468.6625, 468.7125

MONTANA
GLASGOW
Flight tests - 123.225
123.275
Unicom (uncontrolled airport) 123.000
General operations 851.4625
852.2125

OREGON
BOARDMAN
72.20, 462.4125, 153.260, 153.365, 462.225
General operations - 169.445, 169.505, 170.245
170.305, 171.045, 171.105, 171.845, 171.905
853.2125, 855.4375, 855.6875, 853.2125
469.425, 469.675, 469.825, 854.9125, 855.4375
855.8675

Legend:
A. Overhead panel with larger nomenclature, cool LED-lighted switches and lightplates, and flight-deck lighting master brightness control.
B. Full-time, triple-channel autopilot with selectable flight-path angle and track modes.
C. Color flat-panel liquid crystal displays.
1. Primary flight displays.
2. Navigation/multifunction displays.
3. Engine indication and crew alerting system.
4. Multifunction display.
5. Optional side LCDs.
6. Standby flight instruments.
7. Flight-management control display units.
D. Touch-pad cursor-control devices.
E. Full-size printer.
F. Maintenance station.
G. Electronic flight instrument system control panel.
H. Display select panel.



PENNSYLVANIA
EDDYSTONE
Manufacturing operations 153.140
153.260, 158.295, 461.275, 462.250,
Flight tests 123.200
123.250, 123.400, 123.475, 123.525, 123.550

TENNESSEE
OAKRIDGE
Manufacturing operations 72.02
72.06, 72.14, 72.38, 72.44, 72.48, 72.56, 75.44
462.250, 462.450
Manufacturing operations
469.5625, 469.6625, 469.7625, 469.8625,
469.9625

TEXAS
DENTON
Manufacturing operations 462.2625
HOUSTON
General operations 464.525
Manufacturing operations 153.275
153.140

WASHINGTON
KING COUNTY
NOTE - These King County frequencies could be for any of the following locations:
Kent, Auburn, Issaquah, Renton, or Seattle,
Washington, or for all of them.
30.84, 33.14, 33.40, 35.20, 35.94, 35.96, 35.98
42.98, 807.9875, 853.2125, 853.4375, 855.6875
853.2125
Manufacturing operations 74.61
174.000, 488.000, 494.000, 74.63, 74.65
74.67, 74.69, 74.71, 74.73, 74.75, 74.77,74.79,
75.00, 75.21, 75.23, 75.25, 75.27, 75.29, 75.31,
75.33, 75.35, 75.37, 75.39, 153.260
Flight tests 123.200
123.225, 123.250, 123.275, 123.325, 123.350,
123.375, 123.425, 123.450, 123.475, 123.525,
123.550
Public Safety & Special Emergency
KENT
General operations 852.2875
852.2625, 852.7375, 852.0375, 851.2125,
851.5375, 854.4875, 154.570, 154.600,
169.445, 853.0375, 853.3625
Manufacturing operations 153.3200
462.375, 462.400, 809.4875, 956.7500,
Fire 154.190
154.250, 154.340
Public Safety & Special Emergency 852.5625
852.7375, 854.0625

SPOKANE
General operations 169.445
169.505, 170.245, 170.305, 171.045, 171.105
171.845, 171.905, 216.0125, 216.5125,
217.0125, 467.875, 806.000, 853.2125,
855.4375, 855.6875, 852.9875
Manufacturing operations 451.425

154.250,461.025,462.2375462.3625,462.4125,467
.4375,467.450,467.500
AUBURN
Manufacturing operations 153.320
462.450, 462.500, 467.350,
Fire 154.250
154.340
General operations 852.9875
856.3375, 856.4125, 857.3375, 857.4125,
858.3375, 858.4125, 859.3375, 859.4125,
860.3375, 860.4125, 852.4625, 856.4125
Public Safety &
Special Emergency 852.5625
07.5625, 807.7375, 809.062, 852.7375, 854.0625
BELLEVUE
General operations 852.5625
852.7375, 854.0625, 853.2125, 854.9375,
856.2875
BREMERTON
General operations 853.2125
ENUMCLAW
Fire 154.340
General operations 853.2125
854.9375, 858.2675, 857.2875, 858.2875,
859.2875
Manufacturing operations 953.1500
956.7500

EVERETT
Flight tests 123.200
123.225, 123.250, 123.275, 123.325, 123.350,
123.375, 123.425
Air-to-Air 123.4500
123.475, 123.525, 123.550
Manufacturing
operations 153.260
153.320, 467.3500
Fire 154.340
Marine operations (call/distress) 156.800
(commercial/rec) 156.975
General operations 851.0375
806.2125, 806.5125, 851.5375, 851.5625,
851.5625, 851.8625, 852.2875, 852.3125,
852.4125, 853.0375, 853.0625, 853.3625,
853.7875, 853.8125, 854.2125, 854.5625,
854.7125

FREDERICKSON
General operations 856.3375
856.4125, 857.3375, 857.4125, 858.3375,
858.4125, 859.3375, 859.4125,
860.3375860.4125,
ISSAQUAH
Manufacturing operations 462.3250
462.3500

LYNNWOOD
General operations 852.5625
852.7375, 854.0625
MARYSVILLE
Manufacturing operations 451.425
General operations 852.5625
852.7375, 854.0625
MOSES LAKE
Manufacturing operations 462.325
462.425, 853.2125, 853.4375, 855.6875
MUKILTEO
General operations 852.4625
PRESTON
General operations 808.2125
851.5125, 852.2625, 853.0215, 853.2125,
853.4625, 853.7625
PUYALLUP
General operations 852.5625
852.7375, 854.0625
RENTON
Flight tests 123.350
123.550
Manufacturing operations 153.245
451.425, 462.225
General operations 464.775
467.225, 467.350, 852.4625, 851.6625,
852.4125, 852.5625, 852.7375, 853.0625,
854.0625, 854.5125

Public Safety &
General Operations 852.5625
Fire 154.250
154.340
SEATAC
General operations 852.5625
852.7375, 854.0625, 852.9875
SEATTLE
Manufacturing operations 153.080
153.260, 153.320, 462.225, 462.250, 467.350,
462.325, 462.500, 462.375
Fire 154.250
154.340
Marine (Calling/Distress) 156.800
(Commercial/Rec) 156.975
General operations 806.5625
851.6625, 852.3125, 807.4125, 808.0625,
808.8125, 809.5125, 809.5375, 852.4625,
853.8125, 854.5375
Public Safety &
Special Emergency 852.5625
852.7375, 854.0625

NOTICE

This frequency and location list were prepared from my latest information, as of September 1, 1995.

I have had the opportunity to view a video on the Boeing 777 Commercial Airliner and I was very impressed!

I am always looking forward to hear from you with corrections and updates. Send them, along with any other information to: Roger West, P O BOX 291, Amery, WI. 54001-0291.

73's,
Roger West

USSN

THE COMPLETE GUIDE TO
MILITARY MONITORING
NEW BOOK covers all phases of Military Monitoring. Military Frequencies All Services, U.S. Military Bases, Military Black Projects. Major Air Force Installations, Monitoring Equipment and Systems, Navy/Coast Guard and more.
$19.95 plus $4 Priority Mail ($23.95 total).
UNIVERSAL ELECTRONICS, INC.
4555 Groves Road, Suite 12
Columbus, OH 43232 (614) 866-4605

GOVERNMENT

by Roger Cravens

Bureau of Alcohol, Tobacco, and Firearms (Part Two)

PROGRAMS IN LAW ENFORCEMENT

Firearms

Investigative priorities within the Firearms Program are on armed violent and career criminals, narcotics traffickers, organized-crime members, violent gangs, domestics and international arms traffickers, and narco-terrorists. In fiscal year (FY) 1992, ATF initiated 12,314 firearms investigations, recommending 11,406 defendants for prosecution.

HOW MANY ALCOHOL RELATED CAR DEATHS

Project Achilles

During FY 1991, the Department of Justice initiated Project Triggerlock. Triggerlock targets armed violent offenders who violate Federal firearms laws which call for mandatory and enhanced penalties. This national program parallels ATF's Achilles effort developed in 1987. Achilles has become the investigative phase while Triggerlock is the prosecutive phase of the Department of Justice's initiative.

Federal Bureau of Investigation

168.8625 FBI (CH: D1) OCDETF National Repeater
164.5500 FBI (CH: D1) OCDETF National Repeater
164.5500 FBI (CH: D2) Simplex
166.4625 FBI (CH: D3) Treasury Common
167.5625 FBI (CH: D4) FBI Common - Nationwide
167.5375 FBI (CH: D5) Special Case Simplex
163.8625 FBI (CH: D6) Special Case Repeater
167.5375 FBI (CH: D6) Special Case Repeater Out
167.1000 FBI (CH: D7) Dept Of Energy Common
155.4750 FBI (CH: D8) Nat. Emergency Law Enforcement Ch.

OCDETF: Organized Crime and Drug Enforcement Task Force

ATF's enforcement capability has been uniquely enhanced by amendments to the Gun Control Act of 1968 and the enacted Comprehensive Crime Control Act of 1984 in combating the armed career criminal. These statutes have subjected firearms violators, who have demonstrated a propensity toward violent criminal activity, to mandatory prison sentences. Through the Achilles Program, ATF agents throughout the nation continue to fully utilize these federal laws and statutes to investigate and prosecute violent career criminals, serious drug offenders, and armed narcotics traffickers. This extremely serious business brings them in joint operations contact with the Drug Enforcement Agency (see included frequencies for some of the DEA's favorite hiding places within the Government's radio spectrum). Relying on current intelligence from the Federal Bureau of Investigation, I've included a few of the FBI's joint frequencies here.

After the BATF, DEA or FBI investigate these criminals, and our court systems decide they no longer belong on our streets, they are introduced to the Federal Prison System. Some for the first time, while many regard it as home away from home.

In very large, metropolitan areas, the military as well as various federal agencies use the relatively new Federal Trunked frequencies. I have heard rumors that these are also used in areas that are relatively small in terms of population. There is no way to know whether or not your particular area uses these frequencies. When you monitor them for the first time, don't lose interest just because you don't immediately hear them buzzing with activity. They have been known to be quiet for very long periods, then at 9:00 pm some evening come alive with activity.

As mentioned previously, these are men and women who have decided on an extremely difficult and dangerous job --- drug enforcement. They work jointly with a wide variety of other government agencies. Many times you'll hear encrypted transmissions. Many times you will not. You will know when they are close because of the signal "foot print" they leave. What I mean by this is simply the volume and clarity of their transmissions, encrypted or not, can give you an excellent idea of just how close they are to you. Just because your hearing encryption doesn't mean there is no action in the area. Keep listening --- you never can tell when things will "clear up" and you'll be able to hear what you can hear!

Drug Enforcement Agency

Depending on what the mission is at the moment, and under law it will always involve drugs, you'll hear BATF and DEA directly coordinating with our military. All branches are included in this direct coordination. That which appears below is a guess on my part. I have not had experience with these frequencies, but it is my understanding that in some areas the are quite active, especially around coastal areas.

228.9000 DEA BLUE 6
234.6000 DEA BLUE 5
238.4000 DEA BLUE 7
254.2000 DEA BLUE 4
260.8000 DEA BLUE 2
282.4250 DEA BLUE 1
353.9000 DEA BLUE 3
361.8000 DEA AIR SUPPORT

Military Coordination

(Probably U.S. Air Force, Customs, and Coast Guard)

ATF spearheads these efforts through Achilles task forces. There are currently 21 Achilles task forces located in cities throughout the country. These cities have high and violent crime rates, according the FBI's Uniform Crime Report. The task forces' work in the highest, violent crime areas of those cities where they target, identify and prosecute armed, career criminals as well as individuals actively involved in violent and drug-trafficking activities.

In March of 1992, ATF implemented its Violent Offender Program which is an aggressive, pro-active approach to identify, target, investigate, and recommend prosecution of the most violent career criminals nationwide. When a law enforcement officer encounters one of these offenders and queries the National Crime Information Center (NCIC), the officer is alerted that the individual is a violent felon. If the subject is armed, the officer is instructed to contact ATF immediately. Upon conviction, the offender is eligible for significant, mandatory sentencing.

Each ATF field division office has personnel who concentrate on enforcing violations of Title 18, United States Code (USC) 924 to apprehend violent and repeat offenders. Since the inception of the Achilles Program through FY 1992, the Bureau has perfected 6,375 criminal cases with 10,236 defendants under 924(c). Under 924(e), the Bureau has perfected 3,341 cases with 3,980 defendants. As a result, 1,050 suspects have been sentenced under 18 USC 924(e) to 18,461 years in prison. This is an average sentence of 18 years in prison, including 15 life sentences. Additionally, 2,679 defendants have been sentenced to 16,316 years in prison under 18 USC 924(c). This is a average of 6 years incarceration with one life sentence.

Violent-Gang Enforcement

During the 1980's, violent gangs became firmly entrenched among criminal elements throughout the United States. This entrenchment has even extended to all branches of the U.S. military, and gang symbols could readily been seen during CNN coverage of Desert Storm. Their defiance of law and order, coupled with their total disregard for life, has seriously threatened public safety at all levels of society. These gangs are growing in number and expanding their territories. Throughout most of the United States, innocent bystanders have become victims of these gangs.

CIT

ATF has coordinated a multiagency approach to curtail illegal gang activities. Special operational projects entitled Rumpunch I, Rumpunch II, Operation Streetsweep, the Armed Criminal Enforcement Study (ACES) I and II, information sharing conferences, and similar efforts illustrate ATF successes in targeting and prosecuting street gangs.

ATF continues to see an expansion of gang activity in the United States, from small towns to the largest cities. Since the passage of the Gun Control Act of 1968, ATF has sustained a leadership role in interrupting the criminal activities of major gang organizations and the incarceration of their members with an emphasis on gang leadership. The Explosives Control Act of 1970 and recent amendments to the Act combine to arm ATF special agents with powerful legislative weapons to apprehend and remove gang members and other violent criminals from society. Major organizations such as the International Association of Chiefs of Police often seek out ATF for information on gang-related trends, patterns, movements, and successful investigative techniques.

Project Outreach

ATF participates with other Treasury agencies in Project Outreach information presentations to schools, churches, parent-teacher associations, community groups and civic organizations as well as private businesses. The presentations are structured to discourage street gangs, drug trafficking, and substance abuse within individual communities. During FY 1992, Bureau personnel made 1,246 presentations to 65,722 people. Most ATF field divisions have become involved with Big Brothers-big Sisters of America in order to reach a wider audience.

International Traffic in Arms (ITAR)

ITAR is a continuing ATF program to combat the illegal movement of firearms, explosives and ammunition in international traffic. ITAR uses ATF's regulatory and enforce-

Federal Trunking Group

406.3500 NTIA / IRAC Federal Trunking Frequency / Group 1
406.5500 NTIA / IRAC Federal Trunking Frequency / Group 3
406.7500 NTIA / IRAC Federal Trunking Frequency / Group 2
406.9500 NTIA / IRAC Federal Trunking Frequency / Group 4
407.1500 NTIA / IRAC Federal Trunking Frequency / Group 1
407.3500 NTIA / IRAC Federal Trunking Frequency / Group 3
407.5500 NTIA / IRAC Federal Trunking Frequency / Group 2
407.7500 NTIA / IRAC Federal Trunking Frequency / Group 4
407.9500 NTIA / IRAC Federal Trunking Frequency / Group 1
408.1500 NTIA / IRAC Federal Trunking Frequency / Group 3
408.3500 NTIA / IRAC Federal Trunking Frequency / Group 2
408.5500 NTIA / IRAC Federal Trunking Frequency / Group 4
408.7500 NTIA / IRAC Federal Trunking Frequency / Group 1
408.9500 NTIA / IRAC Federal Trunking Frequency / Group 3
409.1500 NTIA / IRAC Federal Trunking Frequency / Group 2
409.3500 NTIA / IRAC Federal Trunking Frequency / Group 4
409.5500 NTIA / IRAC Federal Trunking Frequency / Group 1
409.7500 NTIA / IRAC Federal Trunking Frequency / Group 3
409.9500 NTIA / IRAC Federal Trunking Frequency / Group 2
410.1500 NTIA / IRAC Federal Trunking Frequency / Group 4
414.7500 NTIA / IRAC Federal Trunking Frequency / Group 2
414.9500 NTIA / IRAC Federal Trunking Frequency / Group 4
415.1500 NTIA / IRAC Federal Trunking Frequency / Group 1
415.3500 NTIA / IRAC Federal Trunking Frequency / Group 3
415.5500 NTIA / IRAC Federal Trunking Frequency / Group 2
415.7500 NTIA / IRAC Federal Trunking Frequency / Group 4
415.9500 NTIA / IRAC Federal Trunking Frequency / Group 1
416.1500 NTIA / IRAC Federal Trunking Frequency / Group 3
416.3500 NTIA / IRAC Federal Trunking Frequency / Group 2
416.5500 NTIA / IRAC Federal Trunking Frequency / Group 4
416.7500 NTIA / IRAC Federal Trunking Frequency / Group 1
416.9500 NTIA / IRAC Federal Trunking Frequency / Group 3
417.1500 NTIA / IRAC Federal Trunking Frequency / Group 2
417.3500 NTIA / IRAC Federal Trunking Frequency / Group 4
417.5500 NTIA / IRAC Federal Trunking Frequency / Group 1
417.7500 NTIA / IRAC Federal Trunking Frequency / Group 3
417.9500 NTIA / IRAC Federal Trunking Frequency / Group 2
418.1500 NTIA / IRAC Federal Trunking Frequency / Group 4
418.3500 NTIA / IRAC Federal Trunking Frequency / Group 1
418.5500 NTIA / IRAC Federal Trunking Frequency / Group 3

ment authority to identify and close down sources of firearms and explosives illegally trafficked from the United States to foreign countries. Weaponry diverted illegally from the U.S. is used throughout the world to commit acts of international terrorism, subvert laws of other nations, and further organized crime and narcotics-related activities. International trafficking in firearms is increasing, as evidenced by the rising number of firearms recovered by foreign law enforcement agencies. The ITAR-related investigative strategy is designed to assist countries experiencing problems with smuggled weaponry.

During 1992, ATF submitted 137 ITAR cases for prosecution, charging 293 suspects with Federal firearms or explosives violations. ATF also opened an ITAR office in Mexico City and conducted assessment details in Canada, Great Britain, Hong Kong, the Philippines, and Singapore. The Bureau received requests for assistance from 33 countries that reported 6,862 suspected U.S. firearms recovered in their countries.

Timely and accurate descriptions of recovered firearms and explosives are the key to identifying sources and methods of trafficking. In addition to gathering intelligence on firearms and explosives trafficking activities, ATF provides firearms and explosives technological assistance and training to foreign law enforcement officials.

Special Operation Alliance

Operation Alliance is a multiagency effort to interdict drugs and firearms smuggled across the U.S. southwest border. The objective is to identify, target and prosecute individuals and groups involved in international narcotics trafficking. During FY 1992, ATF initiated 243 Alliance investigations. As a result, 186 criminal cases charging 367 defendant with firearms violations have been recommended to U.S. attorneys for prosecution, and 822 firearms have been seized.

High-Intensity Drug Trafficking Areas (HIDTA)

The Office of National Drug Control Policy designated five areas of the U.S. as HIDTA, qualifying them for increased Federal monetary and law enforcement assistance. ATF participates in HIDTA in New York City, Los Angeles, Miami, Houston, and along the southwest borders. ATF will continue to target gangs and other criminal organizations involved in drug trafficking crimes and firearms-related violence in these areas.

(The following frequencies are also used in combination with local and state joint operations drug task forces. So don't forget your local police frequencies.)

The above frequencies are the primary frequencies that have been reported, but they have been known to use one or more DEA frequencies during various operations in HIDTA areas as mentioned above.

High Intensity Drug Trafficking Area

F-1	414.5500	BATF/DEA HIDTA Repeater - Input 412.5250
F-2	414.5000	BATF/DEA HIDTA Repeater - Input 419.4250
F-3	414.0250	BATF/DEA HIDTA Car-to-car
F-4	414.0500	BATF/DEA HIDTA Car-to-car
F-5	414.1500	BATF/DEA HIDTA Car-to-car
F-6	412.0000	BATF/DEA HIDTA Repeater - Input 417.1250
F-7	414.3500	BATF/DEA HIDTA Repeater - Input 419.3250
F-8	414.4500	BATF/DEA HIDTA Repeater - Input 419.3750
F-9	414.4750	BATF/DEA HIDTA Repeater - Input 419.4000
F-10	412.1250	BATF/DEA HIDTA Repeater - Input 417.1750

General Firearms Programs, National Tracing Center

ATF is mandated to support federal, state, and local law enforcement officials in their fight against crime and violence. The National Tracing Center meets this mandate by providing firearms trace information to domestic and international law enforcement authorities. Firearms tracing has become an integral part of many investigations. Systematic tracking of firearms from manufacturer to purchaser (or possessor) aids law enforcement in identifying criminal suspects, establishes stolen status and proves ownership. ATF, through its licensing authority, is the only Federal agency authorized direct access to these records.

In FY 1992, ATF process 51,420 requests for firearms traces from various law enforcement agencies. The National Tracing Center anticipates moving its facilities to Martinsburg, West Virginia, in FY 1994.

Firearms Interdiction

The Gun Control Act of 1968 is the primary federal law directed toward firearms violence and illegal firearms trafficking. The Crime Control Act of 1990 amended the Gun Control Act regarding the interstate nexus on stolen firearms and firearms with obliterated serial numbers. This expanded ATF's jurisdiction regarding firearms that have traveled in interstate commerce.

The Firearms Interstate Theft Project has been the primary means by which carriers voluntarily report to ATF the theft or loss of firearms from interstate shipments. ATF ensures that the firearms are entered into the National Crime Information Center, initiates an investigative file, and tracks theft patterns. Through FY 1992, there have been 12,729 incidents of theft or loss from interstate shipments reported to ATF. In FY 1992, ATF received 641 reports of firearms lost or stolen in interstate shipments, involving 2,324 firearms.

A central element in ATF firearms trafficking strategy is the ability to accurately trace firearms as they move through commerce, establishing their stolen status and ownership. Through the Firearms Trafficking Program and Interstate Theft Program, ATF field divisions initiate investigations aimed at illegal traffickers who acquire firearms in violation of Federal law and transport those firearms to other states. As some states tighten their firearms laws, trafficking schemes become more intricate. Criminal cases are also perfected on unscrupulous firearms dealers who participate in criminal transactions.

Firearms Technology

The Bureau's firearms technology staff is one of the most competent in the nation. The Firearms Technology Branch conducts firearms tests, classifications and technical determinations. The Branch provides expert testimony in Federal prosecutions and technical expertise and specialized training to other federal agencies, state and local law enforcement agencies, and foreign governments. The Branch examines and classifies firearms and ammunition submitted by the firearm's industry and the public. In FY 1992, some 2,200 formal technical examinations were conducted.

Explosives and Arson

The ATF Explosives Program facilitates investigation of criminal explosives incidents and significant arson crimes. In FY 1992, ATF recommended 928 defendants for prosecution for violating federal explosives laws.

Criminal bombings in the United States increased 20 percent in 1992. Bombing incidents rose to 2,989 in 1992, up from 2,490 incidents in 1991. Bombs in 1992 killed 26 persons, injured 349, and caused $12.5 million in property damage. ATF conducted 256 explosives investigations in 1992.

ATF investigates arson and suspicious fires which are the most serious and damaging but requests for assistance from external law enforcement agencies commonly outpace ATF resources. In FY 1992, ATF conducted 533 full investigations of arson incidents nationwide. These incidents involved 60 deaths, 382 injuries, and $230.8 million in property damage.

National Response Teams

For scanner enthusiasts involved in the serious monitoring of various branches of government, this should be an extremely interesting find if this Team happens to arrive in your area. The ATF maintains a National Response Team (NRT) capability consisting of four strategically located and specialized teams that can respond to scenes of any significant explosives or arson-related incident in the United States. These teams of special agents and technical and scientific specialists are located in the mid-western, north-eastern, south-eastern and western regions of the United States. This multi-jurisdiction approach enables ATF to make maximum use of available resources. An NRT can respond within 24 hours, 7 days a week to any location in the U.S. This is the only specialized capability of its kind offered by a federal law enforcement agency. Technical, legal, scientific and current-intelligence advisors complement the teams. A fleet of 32 response vehicles equipped with state-of-the-art investigative and technical equipment is available to provide logistical support to the team. In FY 1992, the teams responded to 16 incidents nationwide. Since the NRT inception in 1979, these teams have been activated 266 times.

ATF National Response Teams responded immediately to join the Federal Bureau of Investigation and the New York City Police Department in investigating the bombing at New York's World Trade Center on February 26, 1993. The team discovered key evidence that led to the first arrest in the case.

In cases such as the Oklahoma City, OK bombing, other agencies move into high-gear as well, such as the Federal Emergency Management Agency. FEMA frequencies should be a very important part of your national and local emergency frequency file, and newer, updated FEMA frequencies have been provided here for your information, particularly if there is a catastrophe (such as a flood or other disaster) in your area. This listing should not be taken as a comprehensive listing, but is provided more with a view of where to start searching. During an emergency, any federal frequencies may be used, and in cases of a special national emergency or situation, ANY frequency may be used (for more detailed information on what constitutes special emergencies and what occurs during these situations, see Presidential Executive Order 12148 and Part 334, Graduated Mobilization Response, Title 44, Code of Federal Regulations). For the scanner listener, this makes it an exceptional challenge, especially during a crisis. Knowing generally where to look is an invaluable help during these high-stress incidents. Although not fully related to the activities of BATF, these agencies were all involved in one respect or another with the terrorist bombing in New York, and in Oklahoma City, OK. So I thought it important to add them because of the joint operations involved.

International Response Team:

The International Response Team is a product of an agreement with the Department of State in 1991. The team was developed in response to a need for thorough post-blast scene examinations and cause-and-origin determinations at U.S. property locations abroad where the Diplomat Security Service has investigative responsibility. The teams consist of special agents, chemists, explosive-technology experts and certified fire investigators. ATF responds on an "as needed" basis.

Technical or forensic assistance and oversight to foreign governments is also provided. To date, such assistance has been provided on at least six occasions.

Explosive Technology and Training:

ATF has some of the nation's most competent explosives-technology experts. They provide technical support and analysis to assist special agents in explosives and arson investigations. This assistance includes: investigative technical assistance; destructive device and explosive determination; court preparation and presentation of evidence; and destruction of explosives and hazardous materials.

To support this technology, training of agents is an integral part of their operations, and has always been a hallmark of ATF's Explosives Program. Training fosters interagency cooperation and hones the investigative capabilities of ATF agents as well as other federal, state, local, and foreign law enforcement officers.

A number of agents train each year and are certified as specialists in all aspects of explosives handling, destruction,

167.5375	FBI	Nationwide Special Case
167.5625	FBI	Common
138.2250	FEMA	MERSDA-11 Repeater
138.5750	FEMA	MERSDA-5 repeater
138.5750	FEMA	MERSDA-8 repeater
139.4500	FEMA	MERSDA-4 repeater
139.8250	FEMA	MERSDA-2 repeater
139.8250	FEMA	MERSDA-9 repeater
139.9500	FEMA	MERSDA-10 Repeater
139.9500	FEMA	MERSDA-3 repeater
139.9500	FEMA	MERSDA-6 repeater
140.0250	FEMA	MERSDA-1 repeater
140.0250	FEMA	MERSDA-7 repeater
140.9000	FEMA	MERSDC-1 simplex
140.9000	FEMA	MERSDC-7 simplex
140.9250	FEMA	MERSDC-5 simplex
140.9250	FEMA	MERSDC-8 simplex
141.7250	FEMA	MERSDC-11 Simplex
141.8750	FEMA	MERSDA-11 Repeater
141.9500	FEMA	MERSDA-5 repeater
141.9500	FEMA	MERSDA-8 repeater
142.3750	FEMA	MERSDC-10 Simplex
142.3750	FEMA	MERSDC-9 simplex
142.4000	FEMA	MERSDC-4 simplex
142.4250	FEMA	MERSDA-4 repeater
142.9250	FEMA	MERSDC-2 simplex
142.9250	FEMA	MERSDC-3 simplex
142.9750	FEMA	MERSDA-6 repeater
143.0000	FEMA	MERSDA-1/2 Repeater
143.0000	FEMA	MERSDA-7 repeater
143.0000	FEMA	MERSDA-9 repeater
143.2500	FEMA	MERSDA-10 Repeater
143.2500	FEMA	MERSDA-3 repeater
143.6250	FEMA	MERSDC-6 simplex
167.9250	FEMA	N.E.W.S. Net 4 (simplex)
167.9750	FEMA	N.E.W.S. Net 1 Repeater/Mobile Relay (repeater out)
167.9750	FEMA	N.E.W.S. Net 2 (simplex)
169.8750	FEMA	N.E.W.S. Net 3 (simplex)
170.2000	FEMA	Federal Disaster Net
173.1875	FEMA	N.E.W.S. Net 1 Control/mobile (repeater Input)
408.5125	FEMA	Urban Search & Rescue Task Forces
409.4875	FEMA	Urban Search & Rescue Task Forces
410.4875	FEMA	Urban Search & Rescue Task Forces
410.5125	FEMA	Urban Search & Rescue Task Forces
413.2125	FEMA	Urban Search & Rescue Task Forces
416.0375	FEMA	Urban Search & Rescue Task Forces
416.8125	FEMA	Urban Search & Rescue Task Forces
416.9375	FEMA	Urban Search & Rescue Task Forces
417.5875	FEMA	Urban Search & Rescue Task Forces
417.6625	FEMA	Urban Search & Rescue Task Forces
168.5500	NIIMS	National Interagency Incident Management System
030.0900	U.S. ARMY	Explosives And Ordinance Disposal Teams
049.7000	U.S. ARMY	Explosives And Ordinance Disposal Teams
049.7500	U.S. ARMY	Explosives And Ordinance Disposal Teams
049.8000	U.S. ARMY	Explosives And Ordinance Disposal Teams
049.8500	U.S. ARMY	Explosives And Ordinance Disposal Teams
139.0000	U.S. ARMY	Explosives And Ordinance Disposal Teams
139.1750	U.S. ARMY	Explosives And Ordinance Disposal Teams

MERSDC - Mobile Emergency Response Support Det (mers)
N.E.W.S. - National Emergency Warning System

instruction, and postblast investigations. To ensure the specialist's continued expertise, ATF established a recertification program, the only such program offered by a federal law enforcement agency. Selected special agents also undergo intensive training in a two-year program to qualify as certified fire investigators. This program is designed to educate them in advanced fire scene examination, as well as to prepare them to testify as expert witnesses.

ATF also provides training in advanced aspects of postblast scene investigation to state and local officers. Some 1,000 officers have attended this course. Because of experience in this area, ATF is now regularly called upon to train State Department embassy officials world wide, as well as foreign security officials and investigators. Additional training programs educate state and local officers, federal and state prosecutors, and insurance industry professionals on the crime of arson. ATF also offers a more advanced training program focused on improving arson-investigation courtroom presentation and sophisticated elements of fire causes and origins. About 1,700 professionals have attended these programs.

There are 15 arson task forces located in major cities throughout the United States, pooling the talent and resources of ATF with state and local agencies. They have proven vital in the swift identification and prosecution of persons responsible for arson fires. Through participation at the FBI's National Center for the Analysis of Violent Crime, the Bureau provides criminal investigation analysis (profiles) to federal, state, local, and foreign law enforcement agencies to assist in bombing and arson-enforcement efforts. A major proportion of arson cases submitted to NCAVC for analysis are completed by ATF.

Intelligence Support

The Bureau provides law enforcement intelligence and analytical support for ATF special agents and other enforcement agencies at all levels. Much of the information provided to other agencies involves violent criminal gangs throughout the nation.

In FY 1992, the Bureau acquired two computer systems to enhance processing of intelligence information. One system will allow ATF to access international intelligence data bases on national security matters. The second is a tool to locate, display and plot communications patterns (SIGINT-Signals Intelligence), interactions and networks involving criminal groups.

Below are the frequencies you should enter into your scanner for tracking Bureau activities. During your listening, you will encounter encryption. For obvious reasons, ATF did not want to discuss various types of equipment used in day-to-day operations, so I did not press the issue. Instead, I relied on other public material sources for equipment. For special operations work, hidden bugs and personnel or automobile tracking devices manufactured by Audio Intelligence Devices (A.I.D.), Fort Lauderdale, FL are used throughout the Bureau.

Audio Intelligence Devices

DEA and BATF use frequencies in A.I.D. (Audio Intelligence Devices) kits for both receivers and recorders for wireless microphones and surveillance and tracking. These frequencies are provided to give you an idea of what frequency ranges to monitor. Many federal and local police agencies change frequencies on the equipment when newly purchased and periodically thereafter, depending on the mission.

Depending on area of the country, these frequencies are also used in combination with local and state joint-operations drug task forces. So don't forget your local police frequencies.

Now that you have waded through the material dealing with the special operations aspects of ATF, here are the day-to-day operations frequencies. Please keep in mind that, off and on, you will hear voice encryption. Their radios are Motorola, micro-processor-based Syntor X-9000 radios

Buging Frequencies Used By The Government

036.0000	A.I.D. Phone Taps & Monitoring Devices
036.2500	A.I.D. Phone Taps & Monitoring Devices
036.5000	A.I.D. Phone Taps & Monitoring Devices
036.7500	A.I.D. Phone Taps & Monitoring Devices
037.0000	A.I.D. Phone Taps & Monitoring Devices
037.2500	A.I.D. Phone Taps & Monitoring Devices
037.5000	A.I.D. Phone Taps & Monitoring Devices
037.7500	A.I.D. Phone Taps & Monitoring Devices
038.0000	A.I.D. Phone Taps & Monitoring Devices
038.2500	A.I.D. Phone Taps & Monitoring Devices
038.5000	A.I.D. Phone Taps & Monitoring Devices
038.7500	A.I.D. Phone Taps & Monitoring Devices
039.0000	A.I.D. Phone Taps & Monitoring Devices
150.0000	A.I.D. Surveillance Bugs
150.4500	A.I.D. Surveillance Bugs
150.9000	A.I.D. Surveillance Bugs
151.3500	A.I.D. Surveillance Bugs
151.8000	A.I.D. Surveillance Bugs
152.2500	A.I.D. Surveillance Bugs
152.7000	A.I.D. Surveillance Bugs
153.1500	A.I.D. Surveillance Bugs
153.6000	A.I.D. Surveillance Bugs
154.0500	A.I.D. Surveillance Bugs
154.4562	A.I.D. Vehicle/Personnel Tracking Devices
154.4787	A.I.D. Vehicle/personnel Tracking Devices
154.4637	A.I.D. Vehicle/personnel Tracking Devices
154.4712	A.I.D. Vehicle/personnel Tracking Devices
154.5000	A.I.D. Surveillance Bugs
154.9500	A.I.D. Surveillance Bugs
155.4000	A.I.D. Surveillance Bugs
155.8500	A.I.D. Surveillance Bugs
156.3000	A.I.D. Surveillance Bugs
156.7500	A.I.D. Surveillance Bugs
157.2000	A.I.D. Surveillance Bugs
157.6500	A.I.D. Surveillance Bugs
158.1000	A.I.D. Surveillance Bugs
158.5500	A.I.D. Surveillance Bugs
159.0000	A.I.D. Surveillance Bugs
173.2375	A.I.D. Vehicle/personnel Tracking Devices
173.3135	A.I.D. Vehicle/personnel Tracking Devices
173.3900	A.I.D. Vehicle/personnel Tracking Devices
173.2037	A.I.D. Vehicle/personnel Tracking Devices
173.2625	A.I.D. Vehicle/personnel Tracking Devices
173.3375	A.I.D. Vehicle/personnel Tracking Devices
173.3962	A.I.D. Vehicle/personnel Tracking Devices
173.2100	A.I.D. Vehicle/personnel Tracking Devices
173.2875	A.I.D. Vehicle/personnel Tracking Devices
173.3625	A.I.D. Vehicle/personnel Tracking Devices
215.0000	A.I.D. Surveillance Bugs
215.2500	A.I.D. Surveillance Bugs
215.5000	A.I.D. Surveillance Bugs
215.7500	A.I.D. Surveillance Bugs
216.0000	A.I.D. Surveillance Bugs
216.2500	A.I.D. Surveillance Bugs
216.5000	A.I.D. Surveillance Bugs
216.7500	A.I.D. Surveillance Bugs
217.0000	A.I.D. Surveillance Bugs
217.2500	A.I.D. Surveillance Bugs
217.5000	A.I.D. Surveillance Bugs
217.7500	A.I.D. Surveillance Bugs
218.0000	A.I.D. Surveillance Bugs
218.2500	A.I.D. Surveillance Bugs
218.5000	A.I.D. Surveillance Bugs
218.7500	A.I.D. Surveillance Bugs
219.0000	A.I.D. Surveillance Bugs
219.2500	A.I.D. Surveillance Bugs
219.5000	A.I.D. Surveillance Bugs
219.7500	A.I.D. Surveillance Bugs
220.0000	A.I.D. Surveillance Bugs
220.0000	A.I.D. Surveillance Bugs
171.4500	DEA F-1
171.6500	DEA F-2
172.0000	DEA F-3
172.1000	DEA F-4
172.2000	DEA F-5
172.3000	DEA F-6
169.4450	FBI F-1
169.5050	FBI F-2
170.2450	FBI F-3
170.3050	FBI F-4
171.0450	FBI F-5
171.1050	FBI F-6
171.8450	FBI F-7
171.9050	FBI F-8
171.4500	Special Operations Group F-1
171.6000	Special Operations Group F-2
171.7500	Special Operations Group F-3
171.8500	Special Operations Group F-4
172.0000	Special Operations Group F-5
172.2125	Microphone Surveillance Bugs F-1
172.2375	Microphone Surveillance Bugs F-2
172.2625	Microphone Surveillance Bugs F-3
172.2875	Microphone Surveillance Bugs F-4
172.3125	Microphone Surveillance Bugs F-5
172.3375	Microphone Surveillance Bugs F-6
172.3625	Microphone Surveillance Bugs F-7
172.3875	Microphone Surveillance Bugs F-8
166.6625	U.S. Customs Service F-1
166.8625	U.S. Customs Service F-2
164.4625	U.S. Customs Service F-3
164.8625	U.S. Customs Service F-4
165.2875	ATF (Main Channel Two-Way Ch. Also) F-1
166.2875	ATF F-2
170.4125	ATF F-3
165.5125	ATF F-4

(which are the same as those the FBI, Customs, Secret Service, and Treasury Department use.) Their encryption standard is DES-X6, also known as SecureNet.

As I mentioned at the beginning of this article on BATF, you should now have a better appreciation of why I found it so time-consuming to write their stroy. The amount of information that was involved, both in terms of background information on the Bureau and the gathering of the frequency lists, took an enormous amount of time and effort.

Until next time, when I'll be back with another branch of our Government, keep your scanners on and your ears open.

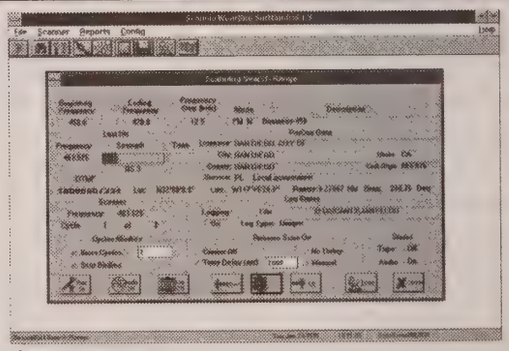
USSN

WINDOWS™ Control for Scanners

ScannerWEAR™ SoftControl 1.4

NOW SUPPORTS:

- OptoScan 456/535
- AOR 3000/3000A/8000 ICOM R7000/R7100/R9000



- Memory banks include 100 channels per bank with frequency, description and mode.
- Search ranges include frequency, step, mode and description.
- Data logging to the file includes date and time stamp, signal strength, tone and number of hits, location (requires PerCon Database).
- Spectra analysis in real time.
- CTCSS & DCS controlled scanning.

OPTOSCAN 456/535 now in stock for $289

ScannerWEAR™ SoftControl STD Windows control for all your basic scanning needs. $39.00 Plus tax & shipping

$99.00 Plus tax & shipping

R•C•S•I Radio Control Systems, Inc.

CALL (800) 560-7234

Tech Support (619) 560-7008; 10am-4:30pm PST

Fax (619) 292-6955 International E-Mail rcsi@cts.com

World Wide Web http://www.cts.com/browse/rcsi

VISA, MasterCard, UPS COD

All trademarks the property of their respective owners.

155.4750	Nationwide Law Enforcement Mutual Aid (simplex)
163.1000	U.S. Government Itinerant
167.5000	Nationwide Operations Organized Crime & Drugs TF(SWAT Teams)
164.4000	BATF Operations
164.5500	OCDETF Car-to-car
164.6500	BATF/Secret Service (tango) Tie-in
165.6625	U.S. Government Itinerant (168.8625 Sometimes Simplex)
165.0250	BATF Operations
165.2375	Nationwide Operations ATF Direct/tie-in With Customs
165.2875	BATF Tactical, Ch. 1 (charlie)
166.5375	Nationwide Operations Atf Repeaters Ch. 3
165.2875	Batf (charlie) Also High Potential For Body Bugs
165.3375	Batf (charlie), Tie-in With Secret Service
165.3500	Local Office Simplex
165.3500	San Diego Local Operations Reported
165.3600	Special Operations Group
165.4375	ATF-customs Working Channel
165.4875	BATF Operations (treasury Common)
165.5125	BATF Special Operations (and Body Bugs)
165.5375	BATF Tactical Operations (simplex)
165.6625	U.S. Government Itinerant
165.7375	BATF Tactical
165.9125	BATF (echo) Tactical/surveillance Operations (simplex)
166.9250	BATF Operations
166.2875	BATF Special Operations/electronic Surveillance (and Body Bugs)
166.4000	BATF Operations (nationwide Repeater Input)
166.4125	BATF Firearms Production Investigations
166.4375	BATF Operations
166.4500	BATF Operations
166.4625	BATF/Treasury Common Channel (simplex)
166.4625	BATF - Simplex (x-ray)
166.5875	BATF (x-ray) Input Treasury/law Enforcement Common Ch. 4
166.5000	BATF Explosive Investigation Operations
166.5250	BATF Operations
166.5375	BATF Local Operations & Routine Communications (simplex)
165.2875	BATF (baker) Nationwide Tactical/customs Link/portable Repeater, Ch. 2
173.8875	BATF (baker) Nationwide Tactical/customs Link/portable Repeater, Ch. 12
166.5625	Fincen (financial Crime Information Center)
165.4625	BATF Tactical (primary)
166.7500	BATF Tobacco Products Investigation (simplex)
166.8500	BATF Operations/car-to-car (simplex)/ch. 14
166.8750	BATF Alcohol Products Investigations
166.9125	BATF Special Operations
165.9250	BATF Operations (sometimes Portable Repeater)
167.5375	Nationwide Special Case
167.5625	U.S. Government Common
168.0000	BATF Nationwide Tactical Operations (simplex)
168.3500	U.S. Government Itinerant
164.5500	OCDETF
169.4450	U.S. Government Itinerant (potential Body Bug)
169.5050	U.S. Government Itinerant (potential Body Bug)
170.2450	U.S. Government Itinerant (potential Body Bug)
170.3050	U.S. Government Itinerant (potential Body Bug)
170.4125	BATF (high Potential For Body Bugs)
170.4125	Nationwide Special Operations Electronic Surveillance (simplex)
171.0450	U.S. Government Itinerant (potential Body Bug)
171.1050	U.S. Government Itinerant (potential Body Bug)
171.8450	U.S. Government Itinerant (potential Body Bug)
171.9050	U.S. Government Itinerant (potential Body Bug)
166.5375	Nationwide Special Operations/arson Investigation Division
173.8875	Nationwide Special Operations (simplex)
407.1500	Nationwide Internal Security (main) Treasury Internal Affairs
407.8250	Nationwide Internal Security ATF Tactical 1 (simplex)
407.8500	Nationwide Internal Security ATF Tactical 2/surveillance (simplex)
407.8750	Nationwide Internal Security ATF Tactical 3/surveillance (simplex)
407.9000	Nationwide Operations
407.9250	Nationwide Operations
407.9500	Nationwide Operations
408.4000	U.S. Government Itinerant
409.1500	Nationwide Treasury (main) Internal Affairs/surveillance/delta-3
414.7000	BATF Repeater B Special Task Forces Interagency Radio System, Ch. 6
414.7000	BATF/DEA/FBI 2 Interagency (on 414.7000 Only)
414.7000	BATF/DEA/FBI 1 Interagency
414.7000	BATF/DEA/FBI 1 Interagency
414.7250	Nationwide Operations
415.0000	Nationwide Operations
415.1250	Nationwide Operations
415.7250	Nationwide Operations
416.0500	Nationwide Operations
416.3250	Nationwide Operations
414.7000	BATF Repeater C Special Task Forces Interagency Radio System, Ch. 7
418.0500	U.S. Government Itinerant
418.9750	DEA 7 Drug Enforcement Administration - U.S. Government Itinerant
418.1250	Nationwide Operations
418.1500	Nationwide Special Operations Group
418.1750	BATF/DEA TAC 1 Special Task Forces Interagency Radio System, Ch. 3
418.2000	BATF/DEA TAC 2 Special Task Forces Interagency Radio System, Ch. 4
418.2250	BATF/DEA Special Task Forces Interagency Radio System, Ch. 2
418.2250	BATF/DEA Special Task Forces Interagency Radio System, Ch. 1
418.2500	Nationwide Shared W/irs Tactical
418.5000	Nationwide Operations
418.5750	U.S. Government Itinerant
418.6250	DEA 1 Drug Enforcement Administration
418.6250	BATF/DEA/FBI 1 Interagency
418.6500	BATF Field Office Operations
418.6750	DEA 4 Drug Enforcement Administration
418.7500	DEA 3 Drug Enforcement Administration
418.7750	Nationwide Operations
418.8250	DEA 5 Drug Enforcement Administration
418.9000	DEA 2 Drug Enforcement Administration
418.9500	DEA 6 Drug Enforcement Administration
418.9750	DEA 7 Drug Enforcement Administration
419.0250	Nationwide Operations
419.0500	Nationwide Operations
419.1000	BATF Field Office Operations
419.9375	BATF Repeater D Special Task Forces Interagency Radio System, Ch. 8

In Addition To The Above, The Following Are Nationwide, Public Safety And Emergency Mutual Aid Frequencies In 800 Mhz. They Are Not Trunked, And Are Protected Under FCC Regulations To Be Free From Encryption. Meaning They Will Be Used Only For Clear Voice Communications Only. These Would Be Used To Coordinate Between BATF Agents And Teams To State-level And Below Law Enforcement And Public Safety Agencies.

821.0125	Mobile Calling Frequency/TAC-1
821.5125	Mobile TAC-2
822.0125	Mobile TAC-3
822.5125	Mobile TAC-4
823.0125	Mobile TAC-5
866.0125	Base Calling Frequency/TAC-1
866.5125	Base TAC-2
867.0125	Base TAC-3
867.5125	Base TAC-4
868.0125	Base TAC-5

Federal Law Enforcement Training Center
Glynco, Georgia
Training Command And Control: U.S. Department Of The Treasury

169.5500	Special Training
169.6000	Special Training
170.0000	Special Training
170.3250	Special Training
170.4250	Special Training
170.6000	Special Training
170.8250	Criminal Investigator's Training
170.9250	Misc/general Use
170.9750	Security
171.5000	Criminal Investigator's Training
172.1000	Misc/general Use
172.2000	Surveillance Repeater
172.3000	Misc/general Use
173.0250	Special Training
173.0750	Special Training
173.1250	Criminal Investigator's Training
173.1750	Misc/general Use
173.7375	Misc/general Use
173.7875	Misc/general Use
173.8750	Criminal Investigator's Training
277.4000	Glynco Naval Airport
415.3000	Tactical 1
417.2000	Tactical 2
419.1750	Tactical 3

ANTENNAS FOR TODAY'S SCANNERS

by W. Clem Small, KR6A, CET

Feed Lines, Lead-ins and Transmission Lines:

They're Not Always Made Of Coaxial Cable

You may have used coaxial cable that had a number such as "RG-58" printed on its insulation, and not given a thought to what that RG in the number meant. The RG stands for "radio guide" and, of course, that's just what a coaxial cable does; guides radio-frequency energy from one place to another, such as from your scanner antenna to your scanner receiver. Over the years since radio technology has been around, there have been various popular ways of guiding radio signals from one place to another; for instance, from antennas to receivers, or from transmitters to antennas. Some of these different ways of guiding signals have been known as "feed lines," lead-ins,"and "transmission lines."

If you check enough radio-electronics dictionaries for a definition of "lead-in" you will find that a lead-in is a kind of feed line. If you then look up "feed line" you may find that a feed line is a transmission line. If a lead-in is a feedline, and a feedline is a transmission line then both lead-ins and feed lines must be transmission lines, so let's see what a transmission line is, and then we'll know a generic definition for all three terms. A transmission line is a material, medium or structure used to guide radio frequency energy from one location to another. So we know that the coaxial cable (fig. 1A) from your antenna to your receiver is not only a lead-in, it is also a feed line and a transmission line.

Scanner antenna transmission lines are almost universally coaxial cables these days, such as those used in Citizen's Band radio and most of the Broadcast, safety, and utility radio services. But if you read about lead-ins in the amateur radio or radio engineering literature you will find that there are several other kinds of cable that are useful as transmission lines. Some of these other kinds of transmission lines actually have something to offer scanner enthusiasts at times so let's take a look at them, and see what advantages each may have for particular applications.

OPEN-WIRE LINES - The simplest transmission line is just an extension of the antenna itself, a continuation from the wire of the antenna which leads on to the receiver. We can call this type of feed line a "single-wire" transmission line; fig. 1B shows an example of this kind of single-wire lead-in. The advantages of single-wire feed lines is that they are simple and inexpensive. For radio signal reception the main disadvantage of feed lines of this type is that the line picks up signals just about as readily as the antenna does. This can be a problem because the antenna is usually designed to have a specific kind of reception pattern, such as non-directional pattern for all-around reception or a shaped beam for directional communication. If the feed line picks up signals, then these will combine with those picked up by the antenna. The result of this combining action is a distortion of the reception pattern. We may not want this to happen.

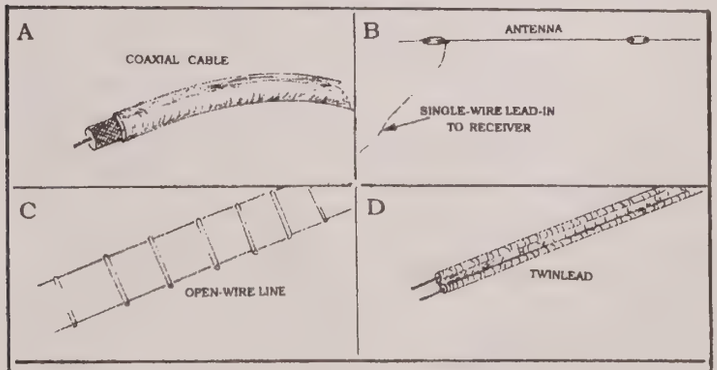


FIG. 1. VARIOUS TYPES OF ANTENNA LEAD-INS.

Open-wire feed line (fig. 1C) is much more common than single-wire, and with good reason. Due to the proximity of the open-wire lines conductors to one another, signal pickup in one conductor is almost entirely canceled by signal pickup in the other. The signal at the receiver is mostly what is picked up by the antenna; very little is due to feed-line pickup, as compared to a single-wire line. Therefore, there is relatively little distortion of the antenna's reception pattern with open-wire line.

A lower level of feed line pickup is good, but the main reason that open-wire line is used in practical applications is that it attenuates the signals it guides very little; its losses are quite low. Larger-size open-wire line's losses are lower than hardline (a very low-loss coaxial-type cable) and comparable to smaller sizes of hardline coax. At VHF-UHF frequencies, this can be very important if there is a long span between the antenna and the receiver. So let's consider when this will be of importance to scanner operation.

Most scanners are located relatively close to their receivers; possibly the average distance from antenna to scanner is twenty-five feet. Ordinary coaxial cable of good quality, which is the kind of feed line we typically use to connect a scanner antenna to its receiver, can be used for this length lead-in with no problems. In other words, ordinary, good-quality coax does not present excessive loss with lengths in this range. On the other hand, if the feed line must span greater lengths we begin to be concerned with losses, and soon decide that a feed line with lower loss levels should be used. As feed line lengths approach 40 or 50 feet we should probably utilize foam-dielectric coax for its lower losses. When we get to 100 feet and longer runs, we will want the lowest possible feed line losses, and we start thinking of premium-quality foam-dielectric coax, or possibly even hardline, if we can stand its cost. A thoughtful perusal of table 1 will give you a feel for comparative loss ratings of some representative types of feed lines.

The sort of situation just described, where we are faced with a long transmission line run between the antenna and receiver, is where open-wire line can be of use to the scanner operator. Its losses are less than the best coax or hardline and yet open-wire line costs less than ordinary coax. Loss levels in TV twinlead line (fig. 1D) are between those of hardline and open-wire line, and so twinlead

also has an advantage over ordinary coaxial cable in terms of low signal-loss levels.

COAXIAL CABLES - Open-wire cables are much better than single-wire lines at rejecting signal pick up, nevertheless open-wire types, including twinlead, do have some tendency to receive signals. This not only causes some distortion to the reception pattern, it allows noise signals to combine with the desired signal via the feed line. Electromagnetic noise signals are radio signals just as surely as are the signals you want to hear, and the noise signals can be a real problem for weak signal reception, or when you use the AM mode as we do on HF, MF, LF and some VHF aircraft monitoring. Noise pick up from both single-wire and open-wire lines is especially serious when the lead-in passes through an environment which has a high level of electromagnetic noise; this is the environment usually found in the vicinity of feed lines that lead an outdoor antenna onto a building which houses the receiver.

The noise field through which the feed line from the antenna must pass comes from the electrical power lines and the wiring of the building. The electrical wiring of the building itself acts as a transmitting antenna for the noise pulses that are always present on electrical power lines. The lead-in from the scanner antenna must pass through this high-intensity noise field on its way to the scanner receiver. Single-wire lead-ins are totally susceptible to receiving this noise as they pass through the intense part of its field in the vicinity of the building. Two-wire lead-in will be less affected because of the cancellation of noise signals effected by the two-wire construction. You will have less powerline noise problem with two-wire line than single-wire line.

On the other hand, coaxial cable has much less noise pick up than either single or two-wire line. This is one of the main virtues of using coaxial cable for lead-in from a receiving antenna. It is almost totally immune to noise as it passes through a noise field because the outer conductor of a coaxial cable is actually an electrical shield which prevents signals outside of the coax from reaching the interior of the cable where they would combine with the signals which have been picked up by the antenna. And so, in situations where the antenna lead-in must pass thorough a noise field on its way to the receiver, coaxial cable is the feed line of choice.

There are other obvious advantages to coaxial cable, such as that it can be run through metal pipes, small holes in metal buildings, underground, or just about anywhere else without affecting the signal inside. Open-wire cable and twinlead must be spaced away from other objects by at least a few inches to function properly, and certainly cannot be passed through metal walls or placed underground without signal loss. And while open-wire lines and twinlead may show extra losses when wet or covered with ice and snow, coaxial cable has no problem with weather; it can even be submerged in water, or buried, and still function perfectly. Coax's main disadvantage is that it has higher losses than open-line and twinlead.

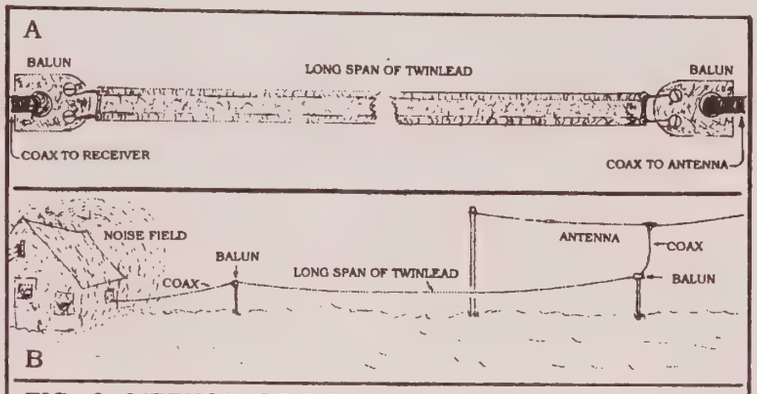


FIG. 2. METHOD OF USING BALUNS TO MATCH COAXIAL CABLE AND TWINLEAD.

THE BOTTOM LINE - For you scanner operators living where a hill blocks most signals you want to receive, or others of you wanting to locate an antenna some distance from your operating position, take a look at the possibility of using open-line, or the more commonly available and easier-to-handle twinlead, for your transmission line.

The matching between twinlead and your 50-ohm antenna output, as well as between twinlead and your 50-ohm receiver input (fig. 2A), can be handled with TV balun transformers, which are available from many radio supply houses, sources like Radio Shack* and many large hardware stores and variety stores such as K-Mart*. The problem of picking up noise on the twinlead near the building where your scanner resides can be overcome by having the coax which comes from the receiver cut long enough to pass through the intense part of the noise field as shown in fig. 2B. The coax can then handle the noise field problem, and the twinlead can save signal loss on the long span.

By the way, all commercial scanner receivers are made with a nominal 50 ohm impedance at their antenna input terminals, and all commercial scanner antennas are made with the same (nominal 50 ohms) feed point impedance. So, if the coax you use has 50 ohm impedance, you needn't worry about impedance matching problems. Actually you don't need to worry too much about which coax impedance you use anyhow because the other commonly available coax impedance, 75-ohms, is not so far from 50 ohms as to cause real grief in most receive-only applications. But when you add open-wire line or twinlead to your antenna system then you should definitely use matching baluns, as discussed above.

WHAT'S IN A NAME? - As a person who is involved in scanning, what term would you use to describe yourself? Names which have been use in the past to describe folks like us include: scanner, scanner enthusiast, scanner buff, scanner monitor, scanner operator, scannerist and scannist. Let me ask you: (1) What other terms have you heard used and,(2) more importantly, what term or terms would you prefer to see and hear used to describe persons involved in the fascinating and exciting hobby of scanning? Please drop me a line in care of U.S. Scanner News and let me know. I would really like to hear from all of you on this question. Thanks.

COMPUTERS AND SCANNING

by Lonnie Gorsline

Scanning and the INTERNET

One of the things that most scanner hobbyists want as they get deeper into the hobby is more information. There's no better place than the INTERNET. The INTERNET has boundless information on scanning and other radio-related topics. No matter what aspect of scanning you're interested in, you can find it.

There are three main places to find information. One is the News Groups, and for scanning there are two sources that would be of most interest. The first one is alt.radio.scanner, and the other one is rec.radio.scanner. I've been reading them both for a while and have noticed that generally all the same information is posted on both news groups. I have found, however, that the rec.radio.scanner location seems to have more information, or at least more people post there.

What is a news group? A news group is an area where different users discuss items of interest in that related category. In our case, it's scanners. Discussions vary from what scanner should I buy to what are the frequencies for a certain agency. If it has to do with scanners, it's usually talked about.

There are other areas in the news groups that will have some information on scanners but these two are the main ones.

The second type of information you will find about scanners is the FTP (File Transfer Protocol) sites. These areas are for downloading information. Here you will find files of shareware programs and text files of frequencies and modifications to scanners and other radios.

Where do you find FTP sites? Sometimes the FTP sites will be a part of a Web Page (covered later), to which you can get direct access. If you know the address of the FTP site you can connect directly to the site. Once there you can view the directory just like you would on your own computer. Another place to find FTP sites is on the news groups. Some users share new information they have found on the INTERNET and some of them are FTP sites. One other way you can find FTP sites is by using one of the many search programs that are on the INTERNET. For instance I like to use the Web Crawler search engine to find different locations. There are many other ones too. Its all up to what you like to use and are familiar with.

The final and probably the most popular areas of information are the Web pages, also known as Home pages. Web pages are like mini BBS's that different users or companies have set up. Each one has its own personality and look to it. Many of them are full of information, and are entertaining as well. Like the other two areas, you will find all kinds of information on just about any type of scanning that interests you. Some Web pages are on specific types of scanning. Others cover the whole gambit. To find these different pages on the INTERNET just do a search using your favorite search engine using the key words "scanning, radio." Once you're on one of the Web pages you will usually find links to other Web pages on like and related topics.

Don't overlook other Web pages where you might find information. For example, if you're interested in what the FCC is doing to the hobby, look at their Web page.

One of my favorite Web pages is the Scanning Reference Home Page. Here you can find all kinds of information. You will find frequencies of different government agencies, as well as specific public safety frequencies, possibly for your area.

Don't think that you are limited to the United States, there is also Europe. A good example of that is a home page called Jiviation. It has several links to other sites in Europe as well as the United States. I think you will find this site especially useful. There is a lot of information about not only scanner radios but locations of other Web, FTP, and News group sites.

As you use the INTERNET more you will find more and more information that will be useful to you and your hobby. Remember though, the information is always changing. Not only are the pages that you find now changing but new ones come on line all the time. In fact, who knows, you might even find a Web page for U.S. Scanner News one of these days.

To get you started on your way to "surfing" the Web, here is a list of News Groups, FTP, and Home Pages. This isn't, by far, all of the information that can be found, but it will get you started. I think you will find a lot of information you may be looking for and even some things you weren't. Its kind of funny; I will start looking for one thing and find something totally different. I remember one time I was looking for information on aircraft frequencies and ended up with information on submarine communications.

One final thing before I end this. There is one other way to get information. That is to exchange E-Mail with other users you know who are on the INTERNET.

USSN

The *Fastest* OptoScan Software
✔ Easiest to Operate
✔ Most On-Screen Data
✔ Best Frequency Management
✔ Imports PerCon FCC Data
✔ Decodes CTCSS/DCS/DTMF
✔ Works on any DOS Computer
Check the rest, then BUY THE BEST!
$99.95 + $7.50 S/H
MasterCard/Visa/Check/Money Order
DataFile, Inc.
P.O. Box 20111
St. Louis, MO 63123
PROBE
Write for Free Details!

RADIO RELATED NEWS GROUPS

alt.radio.scanner
rec.radio.amateur.antenna
rec.radio.amateur.digital
rec.radio.amateur.equipment
rec.radio.amateur.misc
rec.radio.amateur.packet
rec.radio.amateur.policy
rec.radio.amateur.space
rec.radio.scanner
rec.radio.shortwave

RADIO RELATED FTP SITES

amdahl.com
ftp.cs.buffalo.edu
ftp.denib.co.uk
ftp.qrz.com
ftp.uni-paderborn.de
ftp.usr.com
grivel.une.edu.au
mgate.arrl.org
nic.funet.fi
oak.oakland.edu
rtfm.mit.edu
sunet.se
tandem.com
ucsd.edu/hamradio
ucsd.edu/mailarchives/ info-hams
unbc.edu/ampr
vixen.cso.uiuc.edu
wolfen.cc.uow.edu.au

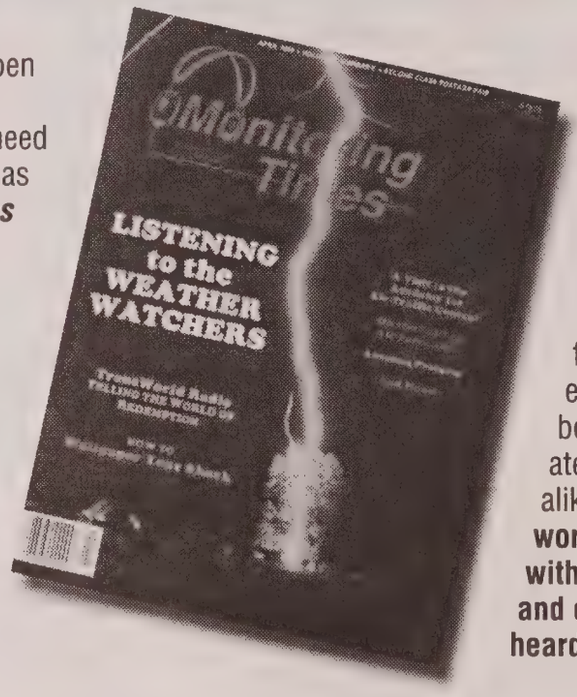
RADIO RELATED WEB PAGES

ftp://ftp.crl.com/users/ro/vhealey/www/ar8000.homepage.html (AR8000 Home Page)
http://bjr.acf.nyu.edu/railinfo/scanning/scanning.html (Scanning Section)
http://comp.uark.edu/~plaws/scan/ (Peters Scanner Page)
http://hypatia.gsfc.nasa.gov/sarex mainpage.html (Sarex Information)
http://itre.uncecs.edu/radio/ (Shortwave/Radio Catalog)
http://macgwy-mac2.gsfc.nasa.gov/garc/wa3nan-home-page.html (Goddard Space Center)
http://metro.turnpike.net/~termcon/index.html (Pauls Web - Main Index)
http://rever.nmsu.edu/~weasel/ (Weasels Home Page)
http://uptown.turnpike.net/T/termcon/index.html (Pauls Web Page)
http://uxl.cso.uiuc.edu/~roma/rr-freqs.html (North American Railroad Freqs.)
http://w3eax.umd.edu/w3eax.html (University of Maryland)
http://w6yx.stanford.edu/w6yx.html (Stanford)
http://www.accessnv.com/kenwood/amateur.html (Kenwood Communications Corp.)
http://www.acs.ncsu.edu/HamRadio (North Carolina State University)
http://www.acs.ncsu.edu/HamRadio/ (Amateur Radio Web Server)
http://www.acs.oakland.edu/barc/ham-more/ham-more.html (Ham Radio and More)
http://www.cc.columbia.edu/~fuat/cuarc/www-sites.html (World Wide Web Site)
http://www.cs.nmsu.edu/~tharrel/scanner/scanner.html (KC5KTOs Radio Page)
http://www.cts.com/browse/rcsi (ScannerWEAR Home Page)
http://www.demon.co.uk/javation/sources/html (Javation Home Page)
http://www.earthlink.net/~artsci/ (artsci Publishing Web Page)
http://www.fcc.gov (FCC Home Page)
http://www.grove.net/ (Grove Link Home Page)
http://www.law.indina.edu/fclj/fclj.html (Federal Communications Law Journal)
http://www.li.net/~j4dice/scanli.html (Long Island Area Scanning Resources)
http://www.mcc.ac.uk/OtherPages/AmateurRadio.html (Radio Related Home Page)
http://www.open.gov.uk/radiocom/libind.htm (Radiocommunications Agency Information & Library Service - London)
http://www.panix.com/clay/scanning/ (Scanning Reference)
http://www.qrz.com (Qrz Home Page)
http://www.scanstar.com (Scan*Star Home Page from Signal Intelligence)
http://www.umr.edu/~lerman/scanpage.html (Bens Scanner Page)
http://wwwdemon.co.uk/lowe/index (Lowe Electronics Home Page)

If it's *on* the Radio, it's *in*

MONITORING TIMES®

News and events happen around the world constantly and you need the right resources to hear it as it happens. ***Monitoring Times*** magazine provides you with the information you need to gather the news and events first hand, without the corrupting influence of news media bias. ***MT* can help you set up your own worldwide monitoring post to hear anything from where the fire trucks are going in your neighborhood to what's going on in other countries.** *MT* provides equipment reviews to help you choose the right equipment; advice to help beginners get started; frequency listings so you know where to tune in; as well as interesting features, stories and tips from the experts. The information in *MT* is both useful and timely— appropriate for beginners and experts alike. **Take the fast lane around the world and in your own community with *Monitoring Times*. Exciting news and events are out there waiting to be heard.**



To subscribe call 1-800-438-8155 (US and Canada);(704) 837-9200 (foreign) or mail this subscription form to *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902.

- ❒ 1 year $23.95
- ❒ 2 years $45.95
- ❒ 3 years $67.45
- ❒ 1 year foreign $53.95(US funds/air mail)

- ❒ Check/M.O.
- ❒ Mastercard
- ❒ Visa
- ❒ Discover Card

Credit Card# _____

Exp. Date _____

Name _____

Address _____

City _____ **State** ___ **Zip** _____ **Country** ____

Signature _____

Monitoring Times

Published by Grove Enterprises

THE SCANNER MAN

Prepared by the USSN staff

Priority Function

Here are a couple of hints for the use of the Priority function in your scanner. You probably already know how it works and what it's for. But what good is it? Do you ever use it? Does anyone?

At first glance, Priority seems like a useful feature, but most listeners simply can't, or won't, tolerate the annoying interruption of a received signal. The Priority function periodically (typically every two seconds) switches between the normal Scan or Manual function to the priority channel to see if there is a signal there. If so, it will remain on that frequency until the conversation is over. If not, it will switch back to the Scan mode. In some scanners the priority channel is always channel one, on others the priority channel is programmable and any channel can be made into the priority channel.

As it switches to the priority channel, of course, reception on the other channel is disabled. Even if it is just sampling the priority channel and finds no activity, it typically takes about a quarter of a second to do so. If you are monitoring a conversation at the time, this quarter-second interruption, every couple of seconds, becomes quite annoying. This is probably why so few people use their Priority function.

So what good is it? Hey, use your imagination. One neat application: turn it into an Instant Weather button! Program your local National Weather Service frequency into your priority channel and lock it out of the Scan cycle. Then, whenever you want your local weather forecast, just push the Priority button. All scanners we know of will go to the priority channel whether it is locked out or not. And since it is a continuous carrier, the radio will switch to it and stay there. When you are through listening, just press the Priority button again to disable it. Slick, huh?

You could also program in your local airport ATIS frequency, if you are close enough to hear it. This will give you the temperature and other conditions, usually current within an hour, at the push of a button. Handy to keep an eye (or ear) on the temperature, now that winter is approaching.

Another use? If you are the methodical type, you always want to find the input (mobile unit) frequency for the new repeater frequency you just found. This is a heck of a lot easier with two scanners, admittedly, monitoring the repeater with one radio and searching with the other. Don't let it stop you if you only have one scanner, though. But why switch back and forth between channels when you think you finally found a "hit"? Just keep the repeater in the priority channel. Stop the search (or press Enter to put your possible hit into a regular channel) then press Priority to instantly switch to the repeater. Of course, in some scanners the Priority function will also work in the Search mode, making this easier.

This will also allow you to periodically switch to the repeater to see if the conversation is still ongoing. No sense looking for the input frequency if they aren't using it! Just press Priority, and if the radio switches and stops on the active signal, immediately press Priority again and resume your search.

This same technique applies to link frequencies in the 406 to 420 MHz band, or offsets in the 450 to 470 MHz band. Trying to ID the user? As soon as you hear activity, search the likely band (VHF-hi, for example) and when you think you have them, press Priority. The radio will switch to the link frequency and you can almost instantly compare conversations. To switch back, turn off the Priority. Pretty neat, huh?

Found any other uses for your Priority function? Drop us a note and we'll print them here.

USSN

Subscription Problems?

Did you Move?

Don't forget to let us know when you are moving, so we can update our files.

Is your neighbor getting your copy of USSN?

Check the address label to make sure your address is printed correctly.

Has your subscription run out?

The top line of the mailing label on your copy of USSN has your subscription expiration date on it. Here's how to read it:

00-00-*00-00-0000*

The first four numbers are the expiration date (month and year). This is when we will mail your last copy under the current subscription.

00-00-**00-00**-*0000*

The next set of numbers are when you first started your subscription to USSN.

00-00-00-00-**0000**

The last set of numbers are for the computer so that it can find your name when needed.

Off to the right side of your label are numbers that look like your expiration date. They are not. These numbers tell which issue the label was attached to, and are for our office use only.

800MHz coverage!
We have scanners with full 800MHz coverage!
Models Available Include:
AOR AR8000, AR3000A
ICOM R1, R100, R7100, R9000
Kenwood RZ-1 Standard CCR-708A
Yupiteru MVT7100, MVT7000, MVT8000
ATLANTIC HAM RADIO LTD.
(416) 636-3636 368 Wilson Ave
(416) 631-0747 (fax) Downsview, ON
All U.S. orders shipped UPS Air Canada M3H 1S9

THE OTHER HALF

by Janet Cravens

Scanners Anonymous

I wanted to start this article out with a special thank you to my husband, Roger. As I mentioned in a previous article, sometimes I get discouraged because I'm so low on his totem pole of priorities, but recently I got pretty close to the top.

I was on my way to work a few days ago when someone pulled out in front of me less than 30 yards ahead in the rain. I slammed on the brakes to no avail - I hit her broadside. The car behind me hit me in the back and knocked me into another car which was coming out of another road at the intersection. My sister-in-law saw the accident and called my parents since no one had Roger's phone number at work. When my parents got to the scene of the accident, my mother asked where Roger was and if I wanted him to be called. I explained that Roger was on vacation this week and that I had tried calling him, but he was still asleep and didn't answer the phone. My mother went to our house and woke Roger up and told him about the accident. Although he did ask if I was hurt bad enough for him to bother coming (at which point my mother lost her cool), he did arrive within 15 minutes after she left to get him. (He later explained that his question was to get a general idea of how badly I was hurt, not because he didn't care. You have to form your own opinion!)

I was already in the ambulance by the time he got to the accident scene, but he came over and talked to me for a minute to let me know he was there and would meet me at the hospital. I was released from the hospital later that day. When we got in his truck to go home, I looked around and didn't see his scanner. Since I knew Roger and his radio couldn't be separated more than 10 minutes without him having anxiety attacks, I asked where it was. He said he felt it prudent to leave it at home since I was intimately involved in the accident. I was so surprised at his restraint and said so. At this time, he reached down in the floor beside me and picked up something and said sheepishly, "Well, I did bring my frequency counter, but I thought it would be tacky to use it at the wreck, so I didn't."

Aren't you all proud of him? He missed a lot of activity that morning, the fire rescue team, the ambulance, the fire trucks, the sheriff's department and the Georgia State Patrol were out at the scene. He might have found a new frequency that day, but chose to care about me instead. He gets a star in my book for that. Thanks, Roger!

Now on with the show. Recently I was researching the Employee Assistance Program at work. While I was there I saw a pamphlet on how to determine if you or someone you love might have a problem with alcohol. With my warped sense of humor, I sat there and ran this through my head and wondered if anyone had ever started a Scanner's Anonymous or other organization where an obsessive-compulsive scanner nut could take a test to see if they had a problem or to find support for their disease. Of course, since I see myself as a Scanner Nut Diagnostician, I took it upon myself to begin the ground work for this organization. I figure the pamphlet should read something like this.

The following questions are designed to assist in identifying problems which might exist if you have a police scanner or shortwave radio. Please answer the questions as honestly as you possibly can.

QUESTION	YES	NO
1. Are you able to be separated from your scanner for more than three hours at a time without suffering from anxiety attacks?		
2. Do you take your scanner with you everywhere you go, including church, the barber shop, and vacations?		
3. Do you make love with the scanner on?		
4. Do you leave the air conditioner on in the house 24 hours a day so the scanner won't be too hot?		
5. Does your scanner have a name?		
6. Do you buy Christmas and birthday presents for the scanner while forgetting the birthdays and anniversaries of other family members?		
7. Do you know radio frequencies for the local sheriff's department from memory while being totally unaware that your anniversary was two weeks ago or that your spouse is actually two years older than you thought?		
8. Do you have more than two antennas on the outside of house or your primary vehicle?		
9. Do you constantly research and study ways to improve your listening power?		
10. Do you have more frequencies on file than the FCC?		
11. Does the local 911 office call you for trunking information on their systems?		
12. Do you provide frequencies to local, state, and federal officials upon request?		
13. Do you touch your radio more times in a day than you kiss your spouse or significant other?		
14. Do you know more about your neighbors than anyone else in the neighborhood although you've never met them face to face?		

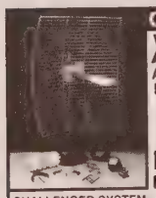
QUESTION	YES	NO
15. Do you have a compelling need to know everyone else's business while maintaining that no one has a right to have that much information on you?		
16. Do you frequently try to pick up signals and "skip" noise from alien space ships?		
17. Do you take a day off work every time the President comes to town so you can listen to the Secret Service?		
18. Have you almost been arrested while conducting research on the length of antennas on the cars for the local sheriff's department?		
19. Do you have more scanners and radios than you have ties hanging in your closet?		
20. Do you listen to more than one piece of electronic equipment at one time?		

If you answered yes to more than three of these questions, you might want to begin monitoring your other activities. If you answered yes to more than seven of these questions, please seek medical attention. If you answered yes to more than ten of these questions, there is no doubt that you qualify for admittance into Scanner's Anonymous. If you won't admit to any of these, have your spouse take the test for you, submit your application for membership, and call 1-800-SCA-NHELP for the SA meeting nearest you!

I'm sure in the future we can take this even farther; we can begin a support group - maybe SCAN-ANON for family members and friends of persons who qualify for membership. We can help each other out in these trying times.

See you next time. Remember, this is not brain surgery

USSN!



Quality Microwave TV Systems
WIRELESS CABLE - ITFS - MMDS
ATV - INTERNATIONAL - S-BAND
Amplifiers • Antennas • Books • Components
Filters • Systems • Video Products
• RF Frequency 1990 - 2700 MHz
• Cable Ready - VHF - UHF Outputs
• SASE For "FREE" Catalog or Send $1
PHILLIPS-TECH ELECTRONICS
PO Box 8533 • Scottsdale, AZ 85252
CHALLENGER SYSTEM
33-Channel 52dB+ Gain
Complete Grid $265
Five Year Warranty
FREE SHIPPING
ORDER LINE 800-880-MMDS
CATALOG / INFO 602-947-7700
FAX LINE 602-947-7799
Visa • M/C • Amx • Disc • COD's • Qty Pricing

CHEEK

The King of Scanners takes this step-by-step, richly illustrated, bench manual far beyond everything ever published on scanner mods. Bill is a perfectionist who will help you convert your scanner into precisely what you've always wanted!

This comprehensive book even includes complete schematics, plans, parts lists, sources, assembly instructions, and test procedures to help you build your own computer interface!

There's expanded memory, cellular, DTS, SCA, and much, much more, and for many scanners.

The most eagerly-awaited book in the history of scanning, and worth every second of the wait!

May 1995, 244 pages, large format, $29.95

EMERGENCY RADIO!
Scanning News As It Happens
Norm Schrein *President, Bearcat Radio Club*
214 pages, $14.95

"Irresistible" *Bill Cheek*
"Excellent" *Barry Goldwater*
"A winner... *911 Magazine*
"Outstanding!" *Henry Eisenson*
"Rates a 10!" *Dispatch Magazine*

SCANNERS
& Secret Frequencies
Henry Eisenson
320 pages, $19.95

"You can't miss!" *ASG*
"Must reading." *Electronics Now*
"Useful, knowledgeable..." *PopComm*
"Absolutely the best..." *Norm Schrein*
"A giant undertaking...authoritative" *Monitoring Times*

INDEX Publishing Group, Inc.
3368 Governor Drive, Suite 273SN
San Diego, CA 92122

First book $4 s/h, $2 ea add'l.
CA add 7.75% tax
MO/check via mail, or call.
Credit cards: 800-546-6707

PRODUCT REVIEW

by Ed Muro

Sky Scan Desk 1300

For most scanner hobbyists who have just come home with their first scanner, after they plug the unit into the wall outlet the next step they take before programming it is to screw in the telescopic whip that is provided with the unit.

Some people will be very happy with this setup for many years, but for others, they will quickly get bored or frustrated. The type of antenna system you choose depends on three variables. The first depends on what you looking to receive on your radio. The second depends on the location of your receiving station in relation to what you hope to receive. Finally, the third depends on the limitations you may encounter in regard to setting up an antenna system. The one theory all technicians will tell you is that your radio is only as good as your antenna system.

For many reasons some people just do not have the ability to mount an outdoor antenna. Some people rent, some live in apartment buildings, and some may just not be up to the task of going up on the roof. Over the years there has been many "quick fixes" for this problem: such as locating a scanner antenna in the attic; mounting a mobile magnet mount antenna outside on an air conditioner or file cabinet; or various other home-brew remedies. There have also been some commercial attempts at indoor "hidden" antennas.

There really hasn't been an acceptable alternative until now! Straight from the United Kingdom comes the **Sky Scan Desk 1300**, desktop discone scanner antenna.

In my twenty years of scanning I have not seen a near-full-size scanner antenna built specifically for indoor desktop use.

Built and designed specifically for scanners, the coverage of the desk 1300 is 25 to 1300 MHz. The Desk 1300 stands three feet tall and is nine inches at its widest point. It comes complete with 10 feet of RG 58 coax and a pre-fitted BNC connector.

After reading the advertisement I was a bit skeptical, but I just had to order it. After I faxed over my order it took about ten days to arrive. I was so excited when I saw the mailman's Jeep pull up. My friends think I am a little "odd" for having this strange looking contraption in my bed room, but all I can say is that it works great.

My personal situation is this: I already have a discone on the roof but when I hooked up several scanners to the same antenna they interfered with each other. In addition to trying to use the telescopic whip that came with one of the scanners I also tried to hook up a high-grade rubber duck to my window with a suction cup mount. I also purchased an after-market telescopic whip from Radio Shack. None of those options were acceptable to me.

After hooking up my Desk 1300 and using it for nine months I can say that in suburban Long Island, New York (which has relatively flat terrain) the Desk 1300 performs just as well as my roof-mounted discone. When I took the antenna with me to rural, upstate New York (which is mountainous) and used it on my portable unit the antenna outperformed my Austin Condor rubber antenna by 30 -40%.

The Desk 1300 is unlike any other discone I have seen. Above the cone are four vertical whips, giving the Desk 1300 both vertical and horizontal active elements pre-cut to set frequency bands. The four horizontal elements are three inch rubber ducks.

The Desk 1300 is made out of good quality stainless steel, aluminum, and a PVC mast. After unpacking the components I was extremely pleased with the high quality of the engineering. It took about five minutes to assemble the unit and I was ready for scanning action.

According to some promotional material supplied by the exporter, they claim that the Sky Scan 1300 has been tested with two other discones. They do not disclose the brand names of these two antennas but the stated results are:

"Test results taken against two other discone antennas, one with out a vertically polarized section and one with such an element, showed that from 50 to 107 MHz there was no difference between the three antennas. From 108 to 136 MHz a gain of 4 dB over the two reference discones was measured. Between 137 and 175 MHz this rose to 7 dB, falling to 2 dB between 176 and 525 MHz. Between 526 and 1300 MHz the sky scan showed a 4 dB gain over the other two antennas. A Radio Shack Pro 2022 and an Icom IC-R100 were used for these tests.

From my monitoring experiences, if you can't mount an outdoor antenna or you just don't want to be bothered with one, the Sky Scan Desk 1300 is a great alternative. I use it along with a Bearcat 890 as my primary receiving set-up while I have dedicated my roof-top antenna for use with my PRO-2005 to receive military aviation.

For more information on the Sky Scan Desk 1300 contact: SRP Radio Centre, 1686 Bristol Road South, Rednall, Birmingham B45 9TZ, United Kingdom. Tel: 021 460 1581.

USSN

CRYSTAL CONTROLLED
SURVEILLANCE
VHF & UHF PROFESSIONAL ENCASED PARTIALLY ASSEMBLED TRANSMITTER KITS
Countersurveillance. Also Tunable 70 to 305 MHz Kits. We Design & Manufacture Our Equipment. Custom Design.
FOR CATALOG SEND $2.00 TO:
SHEFFIELD ELECTRONICS CO., P O Box 377940-J
Chicago, IL 60637-7940. Tel (312) 324-2196

C. CRANE COMPANY
COMMUNICATION
Shortwave • Scanners • Antennas
SANGEAN, GRUNDIG, DRAKE, UNIDEN, AOR
The most powerfull loop antennas for Shortwave/MW and much more!
International shipping
558-10TH ST. FORTUNA CA 95540
Free Catalog FAX 707-725-9060
800 - 522 - (TUNE) 8863

TRANSPORTATION

by Roger West

State of Delaware

The **STATE OF DELAWARE**, which is one of the Mid-Atlantic states, is flanked by the Delaware Bay, the Delaware River, and the Atlantic Ocean on the East, Maryland to the South and West, and Pennsylvania to the North. The state's name of Delaware is derived from that of Thomas West and Baron De La Warr, the first governor of Virginia. During most of its history, Delaware has combined elements of the urban, industrial North and of the more rural, agricultural South. Although larger only than Rhode Island, today Delaware's importance as an industrial state far exceeds its size. For more than 150 years the DuPont Family has played a major role in Delaware's economy and politics.

With the exception of a small area of rolling hills in the extreme North, Delaware consists of a low, gently undulating plane that slopes down to the Atlantic Ocean. Most of the rivers of Delaware, including the Christina and its tributary Brandywine Creek, are short and flow Eastward; exceptions are the Nanticoke and Pomocoke in the extreme South, which empty Southwestward into Chesapeake Bay. Salt and freshwater marshlands are prevalent in the central portion of the state along Delaware Bay. Pocomoke Swamp, the Northernmost cypress swamp in North America, is located in Southern Delaware. Groundwater is ample because of the presence of permeable marine deposits atop crystalline rocks.

Since the colonial period, Wilmington and Northern Delaware have been the states main industrial center, although some industry has spread downstate. Delaware's leading industries, ranked by value, are chemicals, food processing, primary metals, machinery, printing and publishing, leather goods, fabricated metals, and textiles. The State of Delaware is home to the DuPont Corporation, Frank Perdue Chicken Farms, and Vlasic Pickles.

Mineral sources are located in the North, with Kaolin the most significant, followed by construction granite, gravels, and clay which is used to make bricks and tiles.

WILMINGTON, which is the largest city in Delaware, is also the county seat of New Castle County, which is one of three counties in Delaware. It is located at the junction of Brandywine Creek and the Christina River, and is important both as a trading center and as a port of entry. The nearby Chesapeake and Delaware Canal, best known as the C&E, provides access for shipping into Chesapeake Bay.

DOVER is the capital of Delaware and the seat of Kent County, located in the center of the state on the St.James River. Nearby Dover Air Force Base is the site of one of the world's largest military air-cargo operations, and is also a major employer in the state.

EORGETOWN, which is located in Southern Delaware, is the county seat of Sussex County. Redden State Forest is located about 2 1/2 miles Northeast of Georgetown, and Ellendale State Forest is located approximately five miles to the Northwest. Each year the Delaware Wildlife Exposition is held in Georgetown. Sussex County Airport is also located here, and from 0900 to sunset on weekdays, except Wednesday when the hours are 1700 to sunset, and the weekends and holidays from Sunrise to Sunset a person can enjoy watching the activity of parachute jumping and skydiving near the airport.

DELAWARE BAY is an inlet of the Atlantic Ocean and the estuary of the Delaware River. It lies between Delaware and New Jersey and is about 12 miles wide where it joins the Atlantic between Cape Henlopen, DE., and Cape May, N.J..

The **DELAWARE RIVER** rises in the Catskill Mountains of Southeastern New York and flows for approximately 400 miles Southeastward, mostly along Pennsylvania's Eastern boarder. The Delaware River drains an area of about 12,300 square miles. Below Trenton N.J., the head of navigation, are Philadelphia and Wilmington. Flowing through a densely settled region for most of its course, the Delaware River is an important commercial waterway, and its lower reaches are lined with oil refineries, shipyards, chemical plants, and other heavy industries. The scenic upper reaches and headstreams are an important source of water for the cities downstream cities, including New York City.

The **Chesapeake and Delaware Canal** is a waterway in Maryland and Delaware connecting Chesapeake Bay with the Delaware River. It is 14 miles long and 27 feet deep. Completed in 1829, it was operated privately until 1919, when it was purchased by the U.S.Government.

TRANSPORTATION

** All times shown are Eastern Standard Time **

BY AIR

DOVER AIR FORCE BASE, DOVER

[326th AIRLIFT SQUADRON, 709th AIRLIFT SQUADRON and the 512th AIRLIFT WING of the AIR FORCE RESERVE; 436th AIRLIFT WING; AIR FORCE PORT MORTUARY; 35 C-5 GALAXY AIRCRAFT ARE STATIONED THERE]

AIRFIELD OPERATIONS:

REMARKS- Attended continuously.

PILOT ALERTS!!

** Five civilian airports are located within a 10 nautical mile radius of Dover Airfield!!

** Tree line located East of Runway 19!!

** Flocks of birds on and in vicinity of airfield.....mainly form October-April!!

** Noise abatement area.....Strict compliance required!!

** Parachute Jumping in vicinity of airfield!!

SFA/PTD			372.200
ATIS	(1100-0400)	135.050	273.500
Appr		125.900	359.300
		128.000	339.100
		135.150	
		142.200	
App			324.500
Tower		126.350	327.500
Ground		121.900	225.400
Clearance		125.550	289.400

Command Post		
(Air Mobility Command)		
contract carriers only	130.650	
AMC aircraft	349.400	
METRO (weather)		342.500
Ground Controlled Approach	128.000	294.700
	125.900	359.300
		318.100
		339.100

GROUND OPERATIONS:

Base Operations	165.1125
	413.200
Security	148.545
	172.300
	173.4375
	173.9125
Flightline Operations	138.045
Aircraft Maintenance	138.405
Base Maintenance	163.5875
Medics	173.5625
Fire Department/Crash Crews/Trucks	173.5875
	173.8625
Freight Operations	138.275
Commanders Net	413.100
	413.200

NEW CASTLE COUNTY AIRPORT, WILMINGTON
[COMPANY "D" 150th AVIATION, and the COMPANY "E" 150th AVIATION of the ARMY NATIONAL GUARD; 142nd TACTICAL AIR SQUADRON and the 166th TACTICAL AIR GROUP of the DELAWARE AIR NATIONAL GUARD]
AIRFIELD OPERATIONS:

REMARKS- Attended continuously.
Delaware Air National Guard hours of operation 1300-2100 weekdays, and closed Saturdays, Sundays, and holidays.
Delaware National Guard hours of operation 1230-2100, and non-scheduled hours.

PILOT ALERTS!!
**Tall trees on and in vicinity of airport!!
** Flocks of birds on and in vicinity of airport!!
** Helicopter operations on and in vicinity of airport!!
** Extensive pilot training for fixed-wing aircraft and helicopters on and in vicinity of airport!!
** The Army installation is located on the West side of the airport, and there are 29 UH-1H "Huey" helicopters there!!

CTAF		126.000	
UNICOM		122.950	
ATIS	(1200-0400)	123.950	
Appr/Dep		118.350	323.100
Tower (1200-0400)		126.000	305.400
Ground		121.700	275.800
Command Post			
(Air National Guard) "SEABEE"			343.000
National Guard Operations		36.80fm	
		44.80fm	
		46.60fm	
		46.80fm	
		46.90fm	

GROUND OPERATIONS:

Aircraft Maintence	150.345
Airport Shuttle Service	43.76fm
Fire Department/Crash Crews/Trucks	33.78fm
	33.94fm
Federal Aviation Administration	
	165.3375
	165.750
	166.750

CHANDELLE ESTATES AIRPORT, DOVER
REMARKS- Attended continuously.
PILOT ALERTS!!
** Power lines and poles on and in vicinity of airport!
** Tall trees on and in vicinity of airport!!
** Heavy bird activity on and in vicinity October-February!!
CTAF/UNICOM 122.800

DELDOT HELISTOP, DOVER
REMARKS- Attended Monday-Friday 1300-2130.
Helistop is located East-Southeast of Dover.
PILOT ALERTS!!
** Unlighted and unmarked 30' power lines 0.1 mile to the wast of helistop!!
RESTRICTIONS!!
** Approach/Depart Northwest and Southeast!!
CTAF/UNICOM 123.000

DELAWARE AIRPARK, DOVER/CHESWOLD
REMARKS- Attended 1300-dusk.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
** Power lines and poles on and in vicinity of airport!!

CTAF/UNICOM	123.000	
FSS	122.100	
Appr/Dep	128.000	339.100

HENDERSON AVIATION, FELTON
REMARKS- Attended continuously.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
CTAF/UNICOM 123.000

SUSSEX COUNTY AIRPORT, GEORGETOWN
REMARKS- Attended 1200-0400.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
** Parachute Jumping/Skydiving in vicinity of airport!!

CTAF/UNICOM	123.000	
Appr/Dep	128.000	339.100
Clearance	125.550	

LAUREL AIRPORT, LAUREL
REMARKS- Attended 1300-dusk.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
** Ultralight activity on and in vicinity of airport!!

CTAF/UNICOM	122.800	
Appr/Dep	127.950	314.000

SUMMIT AIRPARK, MIDDLETOWN
REMARKS- Attended continuously.

CTAF/UNICOM	122.700	
Appr/Dep	118.350	323.100
Clearance	125.300	

SMYRNA AIRPORT, SMYRNA
REMARKS- Attended irregularly.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
** Migratory water fowl on and in vicinity of airport.....mainly from October-February!!
CTAF/UNICOM 122.800

JEKINS AIRPORT, WYOMING
REMARKS- Attended continuously.
PILOT ALERTS!!
** Tall trees on and in vicinity of airport!!
CTAF/UNICOM 122.800

WARRINGTON FIELD, SELBYVILLE
I have no information on this field, except that it is used for Parachute Jumping/Skydiving! Do any of the readers have information on this field? They may be using one of the following frequencies to alert other aircraft that they have Skydivers aboard:

122.700
122.800
122.900

PARACHUTES ARE FUN

At Millsboro	WNXD640	464.450
	WNXD640	469.450
At Seaford	WNXD640	464.450
	WNXD640	469.450

DALAWARE STATE POLICE HELICOPTER
45.02

THE BOEING COMPANY, NEW CASTLE

Flight Tests	KTV7	123.200
Flight Tests	KTV7	123.250
Flight Tests	KYV7	123.400
Flight Tests	KTV7	123.475
Flight Tests	KTV7	123.525
Flight Tests	KTV7	123.550

* Used by the Boeing Company in the design and testing of aircraft. I believe they are at the New Castle County Airport.

BY LAND

RAILROADS:

AMTRAK at Wilmington
Equipment maintenance 161.455
Equipment maintenance 161.425
Shop operations 452.900

CSX RAILROAD at Wilmington
Yard 161.415
Yard KUU325 160.530
Road WNMQ479, KUU325 160.230
Central control (dispatcher) 160.320
Maintenance of Way KUU325 160.785
WILMINGTON & WESTERN RR at WILMINGTON (a tourist line railroad) 160.755
QUEEN ANNE'S RAILROAD at Lewes (a tourist line railroad)
General operations 160.455
General operations 161.220
NATIONAL RAILROAD PASSENGER CORP. at WILMINGTON
? KNCX744 160.725
? WZX609 160.515
? WNQU644 160.620
? KIL230 161.295
? KNCX744 161.455
? KNCX744 160.425
DELAWARE COASTLINE RAILROAD
General operations KNHZ739 160.425
General operations KNHZ739 160.455
KNHZ739 161.220

BUS SERVICE:
KILLENS BUS SERVICE at Smyrna 464.325

MISC.
W.C.TRANSPORTATION at Millsboro
463.9750
468.9750
JOLLY TROLLY SEAPORT TRANSPORTATION at Lewes
463.475
468.475
WEBBS TRANSPORTATION
at Rehoboth Beach 151.715

TAXI SERVICE:
YELLOW CAB at Willimgton 152.270
157.530
DIAMOND CAB at Wilmington 152.330
157.590
CITY CAB at Dover 157.650
SEAFORD CAB at Seaford 151.805

TOWING COMPANIES:
B&F TOWING at New Castle 157.500
D&J AUTO at Wilmington 464.000
EWING TOWING at Newark 150.845
JOE & TONY'S TOWING at Claymont 150.845
WYNNS SERVICE at Hockessin 150.815
BLU HEN TOWING at Reboboth Beach 154.515

BY SEA

AT WILMINGTON:
CAPES SHIPPING AGENCIES INC.
Comm/Rec 156.450
Comm 156.975
COMPASS MARINE
Comm/Rec 156.450
PENN CENTRAL COMMUNICATIONS
Comm 156.425
Ship-to-Ship 156.650
WILMINGTON TUG
Comm 156.450
Port operations 156.725
Comm 157.025

PILOTS ASSOCIATION FOR THE BAY AND RIVER
Port operations 156.700
Port operations 156.725
Port operations 161.600

AUTOLINERS INC
Port operations 156.725
Comm 156.900

COMPASS MARINE
Comm 156.950

DELAWARE RIVER AND BAY AUTHORITY
All locations
Police F-1 155.310
Police F-2 154.860
Operations 453.0375

At Lewes
Roads 151.0700
Comm 156.3500
Comm/Rec 156.4500

At Newcastle
Roads 151.0700
Roads 453.9625
Roads 458.9625

SLAUGHTER BEACH MARINE at Milford
Comm/Rec 156.450
Comm 157.025

AT LEWES:

LEWES HARBORU MARINA	
General Oper.	154.540
LEWES YACHT CLUB	
Recreational	156.570
Comm/Rec	156.450
ANGLERS FISHNG CENTER	
Comm/Rec	156.350
PILOTS ASSOCIATION FOR THE BAY	
Port operations	156.700
Port operations	156.725
SHORTS MARINE	464.725

AIR MAIL

I received a nice letter from Jack McCartan of Newark, Delaware. Jack sent me some newspaper clippings from The News Journal Newspaper in Wilmington, Delaware, having to do with transportation news in the Great State of Delaware.

The first article is about the City of Wilmington, which is one of the few cities in the nation that owns its own port. The city is in the process of selling its port facility to the United States Government for approximately $40 Million, to be paid over a period of 30 years and the U.S.Government will assume $50 Million in port debt. Besides Los Angeles, no other major waterfront is owned and operated by a city government.

The other newspaper article is about Woody Gilger, who is a Huey Helicopter Pilot for the Delaware Army National Guard located at New Castle County Airport at Wilmington, Delaware. What makes this such an interesting story is that Warrant Officer Gilger had to relearn to walk - TWICE - in an almost two-year period.

Warrent Officer Gilger, who is with Company "E," 150th Aviation Unit, of the Delaware Army National Guard, had a very severe motorcycle accident, which Jack had the displeasure to witness four years ago. Gilger fractured his jaw, knocked out several teeth, fractured several ribs, and suffered a broken right femur. His left tibia and ankle were also broken in the accident. His injuries required surgery that lasted for 7 1/2 hours, required two rods and several screws to be placed in his leg. Needless to say, Woody had to learn to walk all over again.

Knowing that the rods and screws would have to be removed in order for him to fly helicopters, as the Army doesn't allow pilots to have artificial limbs or steel rods if they are going to be a pilot, Woody Gilger returned to the hospital sixteen months later to have the rods and screws removed from his leg, which took 3 1/2 hours of surgery, and then he had to learn to walk once again.

After Woody once again relearned to walk he applied and was accepted into the U.S.Army's Flight School at Fort Rucker, Alabama. Today Warrent Officer Woody Gilger is flying the friendly skys over the State of Delaware! (My hat is off to you Woody!)

Several weeks after receiving the first letter, Jack was good enough to write again with several more newspaper articles from The News Journal Newspaper at Welmington, Delaware which had news about the Delaware River and Bay Authority. With the use of surplus funds, they plan to:

- Operate public transit services from the Delaware and New Jersey terminals of its Cape May-Lewes Ferry.
- Do a $6-million expansion of a Port of Wilmington cold-storage warehouse.
- Make major improvements to Port Salem in Salem, New Jersey.
- Transfer a $2 million, 100-acre tract near the Cape May, New Jersey ferry terminal to a New Jersey-financed aquaculture-research center project.
- Develop a farm-products packaging cooperative for Southern New Jersey.
- Take over Sussex County Airport and Millville New Jersey Airport.

The other newspaper article that Jack sent is about the Delaware State Police Air Wing. Besides doing normal police functions, the three Bell Helicopters that the state owns also do duties as air ambulances, and keep a sharp eye out for marijuana fields and pccasionally shuttle VIP's. This was a very interesting article, and I plan to do a column on this subject in the near future.

I also received a letter postmarked Portland, Oregon with no return address, it listed several frequencies for the Portland, Oregon area:

PDX Ground Support Frequencies	
American	460.650
Horizon	460.675
Northwest	460.700
United	460.725
TWA Hawaiian	
(Airline Terminal Services)	460.775
Delta (international)	460.800
Alaska	460.825
Delta (maintenance)	460.850
Delta (sec.)	460.875
Federal Express	461.1125
United Express	461.5875
Horizon (maintenance)	461.8875
Evergreen (old) (TWA)	463.8125
Maritime Coast Stations	
Brix Maritime (Ch. 10)	156.500
link on	75.340
Tidewater Barge Lines (7)	156.350
Shaver Transportation (79)	156.975
(tugs only, dispatch on 800)	
(CH.10)	156.500
Merchants Exchange (18)	156.900
link on	461.7125
(Ch.11) Secondary	156.550

Thank you, anonymous, and I hope to hear from you again!

Well, that will do it for another month. I hope to hear from you, the readers, as to what you are monitoring transportation wise.

CREDITS:

Jack McCartan of Newark, Delaware

(Roger's note: I would like to thank Jack for all the frequencies and photos he sent, as well as for the tons of information. Jack recently got married, and I would like to wish Jack and his new bride all the best that life has to offer. Jack is also the Delaware Editor for Nation Scanning)

DoD Aviation Books; DoD Aviation Charts; DoD Military Flight Training Routes Book; FCC Data Files; My Data Files; The News Journal Newspaper, Wilmington, Delaware- and Anonymous of Portland, OR.

USSN

Scanners/CB/Weather Stations

New Scanner Products Available

Now it's easy to purchase communications, emergency management supplies, weather forecasting equipment and more directly from Communications Electronics Inc. Your **free fax-on-demand catalog** including unadvertised specials is instantly available by calling 313-663-8888 from your fax machine.

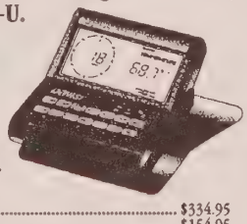
Bearcat Scanners

Monitor police, fire, marine, aircraft, emergency medical transmissions and more with a Bearcat scanner.

Bearcat 9000XLT-U base/mobile $369.95
Bearcat 3000XLT-U handheld $344.95
Bearcat 890XLT-U base/mobile/weather alert $227.95
Bearcat 860XLT-U 100 channel base $154.95
Bearcat 760XLT-U base/mobile $189.95
Bearcat 700A-U information mobile $144.95
Bearcat 560XLA-U base/mobile $76.95
Bearcat 220XLT-U handheld/SPECIAL $207.95
Bearcat 178XLT-U base with weather alert $124.95
Sportcat 150-U handheld with 800 MHz. $158.95
Bearcat 148XLT-U base with weather alert $83.95
Bearcat 120XLT-U handheld $129.95
Bearcat 80XLT-U handheld with 800 MHz. $144.95
Bearcat BCT7-U information mobile $168.95

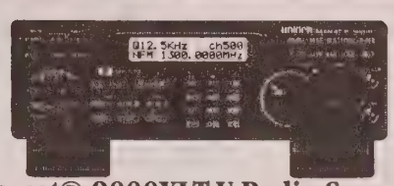
Weather Stations

Now you can be your own weather reporter with the Davis Weather Monitor II. Our top-of-the-line weather station combines the most advanced weather monitoring technologies available into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Push a button, and read indoor and outdoor temperature, wind chill, humidity and barometric pressure. Our package deal includes the new ultra high resolution 1/100 inch rain collector part **#7852-U**, and the external temperature/humidity sensor, part **#7859-U**. The package deal is order **#DAVI-U** for $479.95 plus $15.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for $139.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part **#7862-U**. Apple Mac Plus or higher including PowerBook, order part number **7866-U**.



The Weather Monitor II (7440) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC-power adapter, detailed instruction booklet and one year limited factory warranty.

Davis Weather Monitor II **7440-U** $334.95
Davis Weather Wizard III **7425-U** $154.95
Davis Perception II indoor stand-alone weather monitor **7400-U** .. $124.95
Davis Remote Display Unit **7815-U** $84.95
Davis Rain Collector II 0.01" **7852-U** $59.95
Davis Rain Collector II 0.2 mm **7852METRIC-U** $59.95
Davis Rain Gauge Stand-alone 0.01" **7520-U** $79.95
External Temperature/Humidity Sensor **7859-U** $99.95
Davis Anemometer Mast Mount **7890-U** $15.95
Weatherlink Software for IBM PC-Version 3.0 **7862-U** $139.95
Weatherlink Software for Apple-Version 3.0 **7866-U** $139.95
4-Conductor 40' (12.2 m) extension cable **7876-U** $17.95
6-Conductor 40' (12.2 m) extension cable **7878-U** $21.95
8-Conductor 25' (7.6 m) junction box cable **7880-U** $14.95
8-Conductor 50' (15.2 m) junction box cable **7881-U** $24.95
8-Conductor 100' (30.5 m) junction box cable **7882-U** $44.95
Modem Adaptor 25-Uin for communications port **7870-U** $9.95
Car/Boat/RV Lighter Power Cord **7873-U** $9.95
2400 baud modem for Weatherlink **MEXT-U** $29.95
Talking weather card - Call 313-994-9000 for demo **IT1-U** $474.95
Weatherlink language disks: Française, Deutsche, Italiana, Española **7863-U** $24.95
Barometer, Indoor Hygrometer & Thermometer, Clock/Calendar **BA888-U** . $89.95
Indoor-Outdoor Thermometer/Barometer & Hygrometer by OSI **BA213-U** .. $79.95
Thermometer with transparent calender & clock display by OSI **TC188-U** .. $19.95
Thermometer with AM/FM clock radio by Oregon Scientific **CR388-U** $39.95
Indoor/Outdoor Thermometer with Jumbo Display by OSI **JB880EX-U** $24.95



Bearcat® 9000XLT-U Radio Scanner

Mfg. suggested list price $769.95/**CE Special $369.95**

500 Channels · 20 banks · Alpha numeric display
Turbo Scan · VFO Control · 10 Priority channels
Auto Store · Auto Recording · Reception counter
Frequency step resolution 5, 12.5 & 25 KHz.
Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High

Frequency Coverage:
25.000-549.995 MHz., 760.000-823.995 MHz., 849.0125–868.995 MHz., 894.0125-1,300.000 MHz.

The Bearcat 9000XLT gives you pure scanning satisfaction with amazing features like TurboSearch™ to search VHF channels at 300 steps per second. This base and moble scanner is ideal for surveillance professionals because it has a selectable attenuator to help eliminate annoying intermodulation from adjacent frequencies in highly populated areas and selectable AM, Wide FM and Narrow FM modes that allow you to change the default receiving mode of the BC9000XLT. Other features include ***Auto Store*** – Automatically stores all active frequencies within the specified bank(s). ***Auto Recording*** – This feature lets you record channel activity from the scanner onto a tape recorder. **Hi-Cut filter** to help eliminate unwanted static noise. You can even get an optional ***CTCSS Tone Board*** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle's fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **BC005** CTCSS Tone Board $54.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. The BC9000XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden.

CB/GMRS Radios

The Maxon GMRS 210+3 transceiver is a PLL synthesized 10 channel radio on General Mobile Radio Service frequencies. It's the ideal radio for long range communications. Two repeater channels are programmable and one channel (462.675 MHz.) is set aside for emergency and safety communications. The seven remaining interstitial frequencies 462.5625, 462.5875, 462.6125, 462.6375, 462.6875 & 462.7125 MHz are all-purpose GMRS radio channels. 2 watts of RF power for exceptional transmitting range. Up to 5 watts when used with the supplied 12 volt vehicular DC power cord. CTCSS built-in. Includes 450mAh Ni-cad rechargeable battery pack, AC/DC wall battery charger, owner's manual, FCC license application, belt clip, antenna. Call 1-800-USA-SCAN to order.

Maxon GMRS210+3-U GMRS transceiver $188.95
SPECIAL Buy 2 or more GMR210+3 at $174.95 each

WTA3DT-U Ni-cad battery charger for WTA6GN4 & WTA6GN2 .. $58.95
WTA6GN4-U Ni-cad pack gives 4 watts power with 210+3 ..... $55.95
WTA6GN2-U Ni-cad pack gives 2 watts power with 210+3 ..... $29.95
WTA6GA-U Alkaline battery case – requires 6 AA batteries $9.95
WTA8GA-U Carrying case for Maxon GMRS210+3 ..... $29.95
WTA10G-U Speaker/microphone for Maxon GMRS210+3 ..... $18.95
WTA13G-U Push-to-talk mini-VOX headset for GMRS210+3 ..... $47.95
WTA14-U Antenna adaptor/screw-in male to BNC connector $9.95
ANT4GM-U 1/4 wave UHF magnetic mount mobile antenna $29.95

Cobra 2010GTLWX-U SSB base with weather alert† $379.95
Cobra 148FGTL-U CB with frequency counter $209.95
Cobra 29LTDWX-U CB with weather alert $114.95
Cobra HH40-U CB 40 channel handheld transceiver $99.95
Ranger RCI2950-U 25 watt 10 meter transceiver $239.95
Uniden GMR100-U GMRS handheld transceiver $144.95
Uniden WASHINGTON-U SSB CB Base († $25.00 shipping) $199.95
Uniden GRANTXL-U SSB CB Mobile $139.95
Uniden PRO538W-U CB & Weather $59.95

VHF Transceiver

RELM® WHS150-U Transceiver/SPECIAL

Mfg. suggested list price $481.67/**CE price $299.95**

Police and fire departments depend on the RELM WHS150 transceiver for direct two-way communications with their police, fire department, civil defense agency or ham radio repeater. The WHS150 is our most popular programmable five watt, 16 channel handheld transceiver that has built-in CTCSS, which may be programmed for any 39 standard EIA tones. Frequency range 148.000 to 174.000 MHz. Will also work 144.000-148.000 with slightly reduced performance. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode and programmable ANI. Weighing only 15.5 oz., it features dealer programmable synthesized frequencies either simplex or half duplex in both 5.0 and 6.25 KHz. increments. Other features include scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the WHS150 from Communications Electronics Inc., you'll get a complete package deal including antenna, battery, belt clip and user operating instructions. Other accessories are available. A leather carrying case with swivel belt loop part **#LCWHS** is $49.95; rapid charge battery charger, part **#BCWHS** is $69.95; speaker/microphone, part **#SMWHS** is $54.95; extra ni-cad battery pack, part **#BP007** is $59.95. The radio technician maintaining your radio system must order programming instructions part **#PI150** for $18.00 to activate this radio. FCC license required for United States operation.

Other neat stuff

PH5000-U Waber 500VA/340 Watt computer uninterruptable power supply $159.95
WX70-U weather radio with National Weather Service storm alert $29.95
WB-U USA Today The Weather Book, Guide to USA weather by Jack Williams $15.95
PSUN-U Partly Sunny, Weather Junkie's Guide to Weather by Alan Fields $11.95
Grundig Yacht Boy 400-U digital portable shortwave – 40 memory $179.95
Grundig Yacht Boy 230-U portable shortwave receiver $109.95
Sangean ATS800-U portable 20 memory shortwave receiver $69.95
Sangean ATS803A-U portable shortwave w/AC adapter – 9 memory $129.95
Sangean ATS808-U portable 45 memory shortwave receiver $129.95
Uniden EXP9200-U 900 MHz. 1 or 2 line spread spectrum cordless phone . $289.95
Uniden EXP9100-U 900 MHz. 1 line cordless spread spectrum telephone ... $224.95
Uniden EXP901-U 900 MHz. 1 line cordless analog telephone $149.95
Bogen FR3110-U Digital FAX Friday Fax-on-Demand & answering system ... $399.95
Bogen FR3020-U memory module for Fax Friday/up to 36 minutes $99.95
Bogen FR2000-U Digital two-line voice mail & answering machine $279.95
Bogen FR0018-U memory module, doubles recording time to 36 minutes $79.95
FANS P161P-U 60 name/number caller ID, unwanted call blocker, paging .. $149.95
SNI ID200-U Bouncer name/number caller ID, call reject, forward $89.95
ICOM GP22-U handheld global positioning system (GPS) $489.95
RELM WHS150-U VHF handheld 5 watt, 16 channel transceiver $299.95
RELM RH256NB-U VHF 25 watt, 16 channel synthesized transceiver $289.95
Ranger RCI2950-U 25 watt 10 meter ham radio transceiver $239.95
Cobra RDL712SW-U Safety Alert & Super Wideband Laser/Radar receiver .. $139.95
Uniden LRD6399SW-U Super Wideband Laser/Radar receiver-VG2 protection $99.95
ANTK-U VHF scanner/VHF transmitting antenna PL259 connector $29.95
ANTMMBNC-U magnet mount scanner antenna w/ BNC connector $29.95
ANTMMMOT-U magnet mount scan antenna w/Motorola plug $29.95
ANTMMPL-U magnet mount scan antenna with PL259 connector $29.95
ANTSGBNC-U glass mount scanner antenna with BNC connector $29.95
ANTSGMOT-U glass mount scanner antenna with Motorola jack $29.95

Buy with confidence

It's easy to order from us. **Mail orders to**: Communications Electronics Inc., P.O. Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add $15.00 per radio product or weather station for U.P.S. ground shipping and handling in the continental U.S.A unless otherwise stated. Add $10.00 shipping for all accessories and publications. Add $10.00 shipping per antenna. For Canada, Puerto Rico, Hawaii, Alaska, Guam, P.O. Box, or APO/FPO delivery, shipping charges are two times continental U.S. rates. Michigan residents add state sales tax. No COD's. Satisfaction guaranteed or return item in 31 days for refund, less shipping. 10% surcharge for net 10 billing to qualified accounts. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. We welcome your Discover, Visa, American Express or MasterCard. Call anytime 1-800-USA-SCAN or 800-872-7226 to order toll-free. Call 313-996-8888 if outside the U.S.A. FAX anytime, dial 313-663-8888. For technical assistance, call our technical support hotline for $2.00 per minute at 1-900-555-SCAN. Dealer and international inquiries invited. Dial 313-663-8888 for fax-on-demand info.

Price schedule effective 9/3/95 AD #090395GEN Copyright © 1995 Communications Electronics Inc.

For credit card orders call
1-800-USA-SCAN

COMMUNICATIONS ELECTRONICS INC.
Emergency Operations Center
P.O. Box 1045, Ann Arbor, Michigan 48106-1045 U.S.A.
For information call 313-996-8888 or FAX 313-663-8888

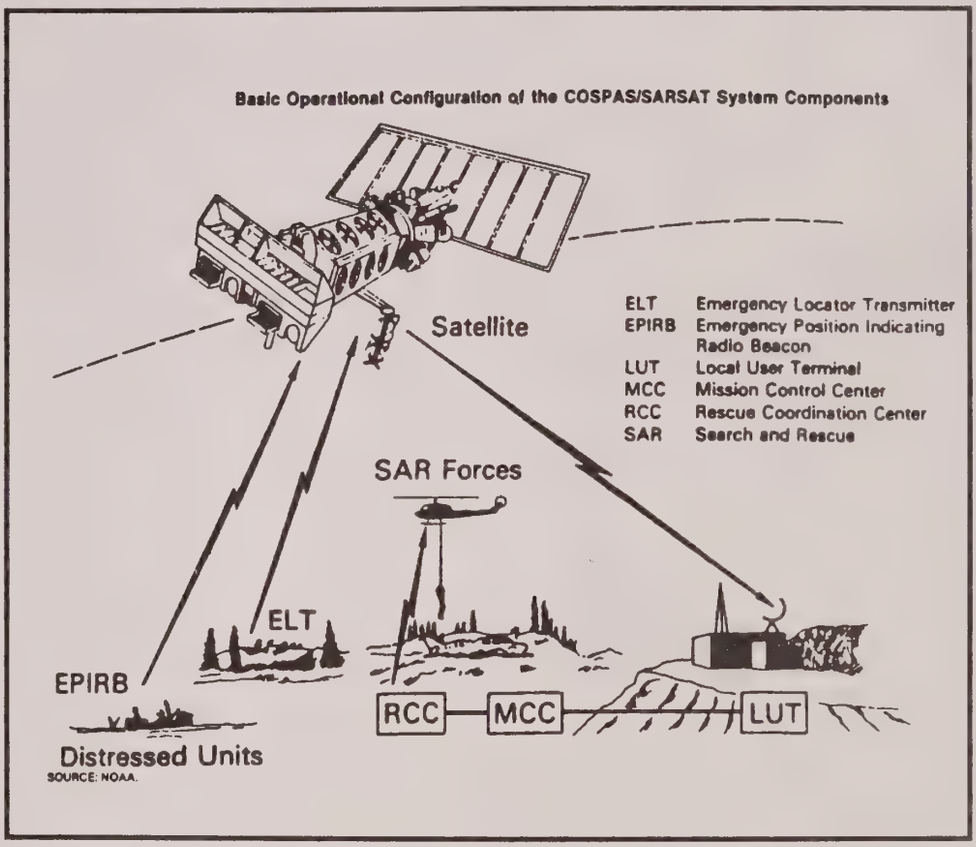
SPACE COMMUNICATIONS

By Donald E. Dickerson, N9CUE

SARSAT-Search & Rescue

TV shows like Rescue 911, American Detectives and I Witness Video are very popular and with good reason. Everyone likes a real-life drama! The heroics performed by rescuers during emergencies appeal to the more noble side of human nature. The environment they are forced to work in is dangerous. That's how someone got in trouble in the first place. Few places are more unforgiving to the unsuspecting traveler than the high seas or the open skies and few places provide more drama during an emergency.

Personnel aboard ships at sea found early on that radio communications were their only hope of ever receiving assistance in an emergency. In the days of spark-gap transmitters, 500 KHz was the international emergency frequency. Today 2.182 MHz and 156.8 MHz are more familiar to most of us. 2.182 MHz is used for emergency calls over great distances, short range calls can be made on 156.8 MHz.



Aircraft carry Emergency Locator Transmitters (ELT's) which enable rescuers to find the downed aircraft. Ships carry Emergency Position Indication Radio Beacons (EPIRB's). Hand-held units are the most common type emergency transmitters. These battery-operated devices can be automatic or used manually.

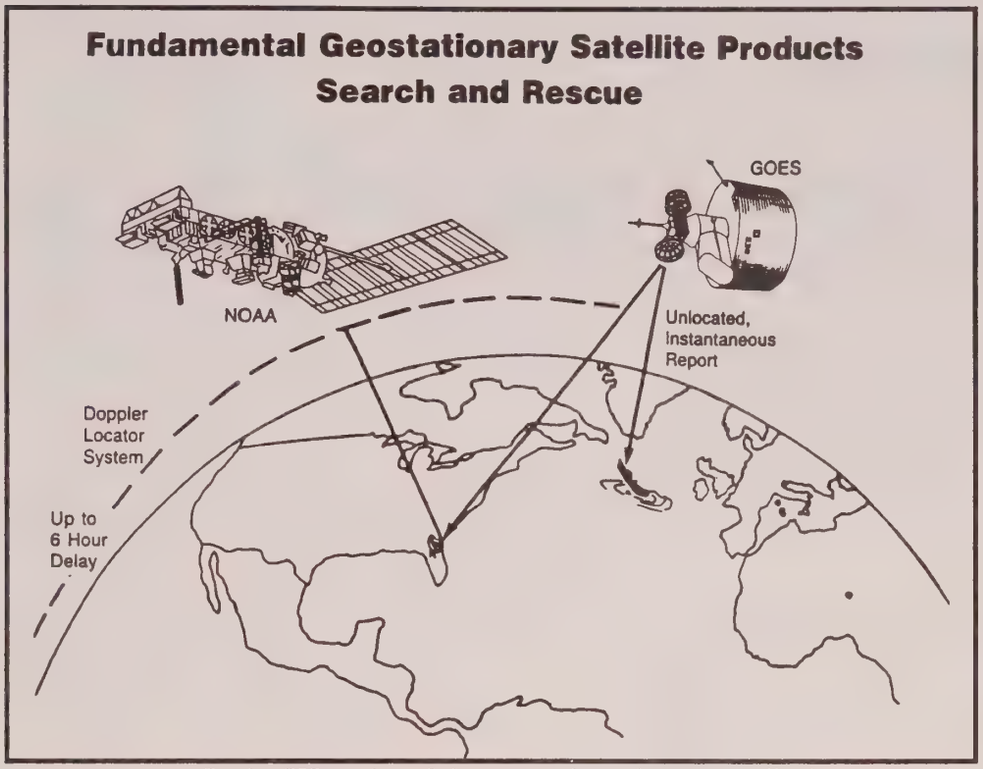
This is where the Search and Rescue satellites come in. They are able to hear, locate and relay information on downed aircraft or ships at sea to ground stations where emergency measures are initiated. They satellite system has a name SARSAT/COSPAR, Search and Rescue Satellites. COSPAR is the name in Russian and they usually appear together as this is a joint US-Russian venture, as far as the spacecraft go. Two other countries contribute to the system; Canada and France. The US and Russia provide the spacecraft while France and Canada provide some of the onboard systems and ground facilities. Each country provides ground stations that can receive signals from specific satellites which monitor emergency or distress frequencies.

The SARSAT system is actually made up of transponder packages that are carried into space onboard US and Russian weather satellites, some orbiting the earth in polar orbit, others in high geo-stationary orbits. The Russian polar orbiting satellites are called METEOR and the American spacecraft are called Advanced Tiros, which upon reaching orbit are called NOAA after the agency which is responsible for their operation. The satellites are then given identification numbers, NOAA 11, NOAA 12, etc.

Polar orbiting satellites determine the location of emergency transmitters using Doppler radar techniques. There is what appears to be a natural shift in frequency as the satellite passes over the transmitter. The satellites relay the emergency signal to waiting ground stations. There are 11 stations in five countries around the world. It should take no longer than six hours for one of the many orbiting weather satellites that carry the SARSAT transponders to locate an emergency signal and relay it to a waiting ground station. The GOES geo-stationary weather satellites are capable of relaying signals from NOAA satellites, including the location information, to ground stations.

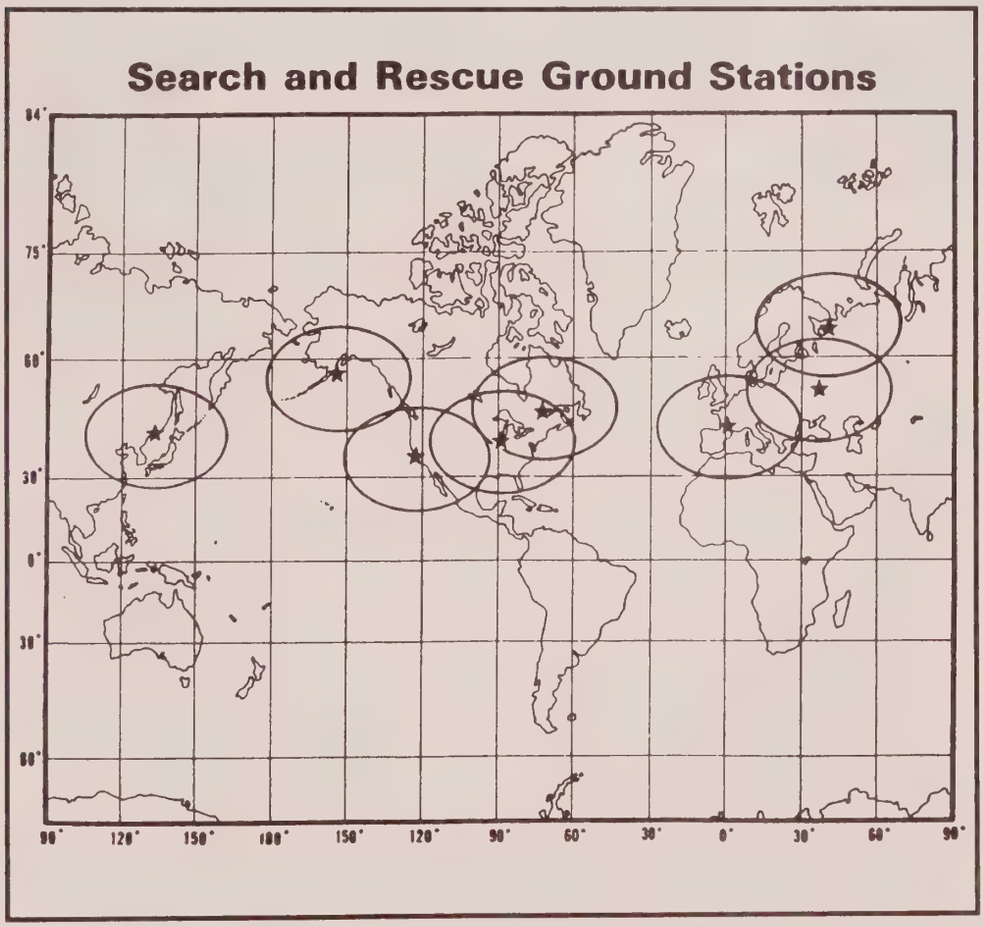
Aero-band emergency transmitters use three frequencies; 121.5 MHz, 243 MHz and 406.5 MHz. 121.5 is used by private and commercial aircraft. 243 is used by military aircraft and the 406.5 is a new class transmitter which will see more service in the future.

Once an emergency signal is picked up by an orbiting satellite, it is relayed to ground stations. They in turn, relay it to the ground station closest to the incident. This ground station then contacts the appropriate civilian and military



response teams. In the US, units of the Coast Guard and Civil Air Patrol are dispatched. Other elements of the Navy and Air Force can respond as needed.

When search and rescue operations are underway near the coast or other large bodies of water, you can expect to hear radio traffic from ships, aircraft, helicopters and coastal stations. You may be privy to medical emergencies onboard ship, engine failures, emergency landings and much more. There are many unsung heroes in the Search & Rescue system. Thousands of lives have been saved through SARSAT thanks to the dedicated professionals who put their lives on the line everyday.



International Distress Frequencies

500 KHzShips
2.182 MHzShips
8.364 MHzShips
121.5 MHzLife Boats
156.8 MHzAircraft
243.0 MHzMilitary
406.5 MHzAir/ship

Search & Rescue Helos

30.830 MHz
32.210 MHz
34.500 MHz
38.160 MHz
40.950 MHz
41.880 MHz
123.050 MHz
126.400 MHz

Coast Guard Air

164.300 MHz
237.900 MHz
277.500 MHz
381.500 MHz
383.800 MHz

Civil Air Patrol / Military

40.500 MHz
121.600 MHz
122.900 MHz
123.100 MHz
143.900 MHz
148.150 MHz
149.925 MHz
173.580 MHZ
282.800 MHz

Ground Stations

Kodiak, Alaska
Point Reyes, Calif.
Scott AFB, Ill.
Washington DC
Trenton, NJ
Ottawa, Ontario
Toulouse, France
Tronso, Norway
Moscow, Russia
Archangel, Russia
Vladivostok, Russia

USSN

TECHNICAL STUFF

by Steve Donnell, WA1YKL

Opto Electronics Scout, Model 40

The Model 40 Scout is Opto Electronic's design upgrade to their very popular portable frequency counter and logger. The Model 40 incorporates a number of both hardware and firmware improvements. The usable battery operating time has been extended to ten hours. This is complemented with an improved battery charging circuit. The Model 40 also has increased memory storage space. Where the old Model 25 could only store 50 separate frequency "hits," with a maximum event count of 250. The new Model 40 can store 400 different frequencies, with a total of 255 event counts. One BIG improvement with the Model 40, is in the serial data port, which permits it to directly interface to an AOR AR2700 or AR8000 scanner. More on that later. The new Scout still employs a users selectable, audible beep or vibrate signals to alert you.

I do not know if there were any changes to the signal input amplifier circuits, but my Model 40 measured a few Db more sensitive (see table 1.) than the Model 25 that I tried earlier this year. I also have not noticed any random counting instabilities in the Model 40 when the antenna is removed. One potentially serious problem I did notice early on when doing the sensitivity measurements that the Model 40 was not able to read frequencies over 850MHZ when its batteries were low, although not yet low enough to trigger the Low Bat indicator or to affect counting of lower frequencies.

I do like the signal-strength bargraph indicator on the Scout, which has almost a 50Db dynamic range. In testing its response on a 156MHZ frequency, it indicated a single bar at a minimum signal detection level of -49Dbm. The graph did not go to full scale until the signal level was raised to -10Dbm. I expect to find the Scout to be very handy at transmitter "fox hunts" and for doing Emergency Locater Transmitter (ELT) or Emergency Position Indicating Radio Beacon (EPRIB) hunting. A signal "Max Hold" feature would be a nice feature to look for in the future.

The Model 40 is supposed to have certain improvements to its Digital Filter firmware, but I cannot say that it is noticeable. I still see some frequency readings which show up as five to 20KHz or more off from what they should be. I'm not yet sure as to how much of this is related to characteristics of some signals the Scout sees, things such as modulation type and transmitter frequency stability at key up. And how much may be limitations of the Scout's firmware. I even suspect that some erroneous readings obtained while mobile may be in part due to Rayleigh signal fading(mobile signal flutter) affecting the Scout's computer in averaging of count values(frequency readings). However, I have also seen similar frequency errors show up in use of the Scout at home, when connected to an outside antenna.

Besides simple calibration errors, there are a number of things that can cause ANY frequency counter, including the Scout, to read incorrectly. Modulation is one. Data signals having Frequency Shift Keying (FSK) and even Audio Frequency Shift Keying (AFSK) modulation can be a problem. An example is various digital paging transmissions. AM voice can also be a problem. I have often seen a random 27 or 28MHZ reading show up on my Scout or other frequency counter while mobile, these are usually found to be Truckers on CB CH19 (27.185MHZ). But many of these transmitters may not be the most stable and many are purposely over modulated.

I have also seen rare but repeated instances of what can be described no better then as, "frequency counter intermod." This is where a totally false frequency is displayed when two different signals, close in frequency and close in signal strength, are present. One example of this I have seen is when a close-by, 146MHZ, 2 Meter Ham repeater is operating and my local Police dispatch transmitter on 155MHZ is keyed up, a false frequency in the 151MHZ area is often displayed. Off hand, the counter that I have witnessed this particular condition with, was NOT the Scout.

One type of interference that can be a problem for the Scout or ANY other

Scout Model 40 Signal Sensitivity Tests
Table 1.

Frequency	Sensitivity Free Running	Sensitivity Capture Mode
46 MHz	1.60 mv	2.00 mv
122 "	.75 "	.94 "
155 "	.79 "	.89 "
460 "	.94 "	.84 " w/ 15 KHz error

One type of interference that can be a problem for the Scout or ANY other counter is that of signal pickup from nearby FM Broadcast transmitters. Opto does market their own FM Broadcast-band notch filter, the N100, but its $99 price is a bit steep. I tried a notch filter from Radio Shack for only $4, the 15-577. Although it requires the use of coaxial adaptors to change its TV type

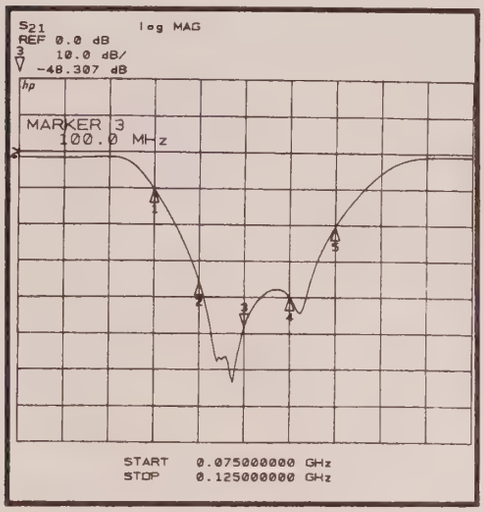


Table 2 - Radio Shack, 19-577 FM Broadcast Band notch filter.

F connectors to BNC's, I have been very pleased with the results that I get with it (See table 2). Although the larger part of its attenuation does not kick in until you get above 92MHZ, its attenuation over the rest of the FM Broadcast band is at least 20Db or better. In looking at the characteristics of the 15-577 filter over a much wider frequency span (not shown) I found its thru-loss to be 3Db or less, up to 500MHz and only about 8Db at 860MHz. In most cases, I think that the filter from Radio Shack is quite adequate. For more important applications you still may want to use the N100.

Now if they could only do something about signals from Paging transmitters, which seem to abound from nearly every other hilltop, tower and tall building. The reason that these and FM Broadcast signals are such a problem is twofold. One is that transmit sources for these two radio services are found all over the place. And second, next to Television Broadcast signals, Paging and FM signals produce the strongest radiated-field-strength levels due to the high transmit power levels they use. In doing drive-around tests with my Scout, Paging transmitter signals were a major annoyance. One way these could be dealt with might be to include some type of detection block in software of specific frequencies or bands of frequencies, but the interference would still exist which could possibly "blind" the Scout from seeing other signals. The best way of course to cure this condition would be to use some very selective notch filters to reject signals in the 152 and 454MHz area. I know there are other paging frequency allocations but these are by far the most commonly used.

One major ergonomic complaint that I still have with the Scout is the belt clip it is supplied with. The clip, although made of plastic, is certainly sturdy enough and not likely to become detached. Unfortunately there is nothing to keep it from slipping off of one's belt. I would not trust it for use on a $20 pager or a $200 scanner, and there's no way I would use it on the $400 Scout. Immediately after getting my Scout, I replaced the stock belt clip with a metal one, that I got off of an old NEC pager, which included a special retaining hook at it's lower end to keep it from sliding off my belt.

On the Road (again) With the Scout

Without a doubt the most interesting aspect of the new Model 40 Scout is being able to have it automatically tune an AOR AR8000 or AR2700 to receive whatever nearby signals that the Scout detects. Opto Electronics refers to this capability as "Reaction Tuning." This does require a simple modification to add a submini audio connector along the side of the AR8000 or 2700 to serve as an extra data-input line and use of a two-conductor cable to interconnect the Scout's serial data port and the extra data port on the AR8000 or 2700. In mobile usageI usually hook the Scout up to a multiband antenna and have a small rubber duck attached to my AR8000. A signal strong enough to trigger the Scout will certainly be easily heard on the scanner using just a simple duck.

In actual use I have found the Reaction Tuning feature of the Scout to be quite handy and to be very FUN. It has alerted me to a number of interesting signals around me. One was a 455MHz link in use by a radio station doing a "live remote" from a local nightclub. Another was some idle chatter by a couple of nearby taxi drivers on a 152MHz frequency. And still another was from some Utility company workers on a 153MHz frequency, talking about welding a gas pipeline at a construction site that I was driving past. While I have not as yet picked up any "stealth" Police communications with the new Scout, with possible exception of a newly licensed 159MHz mobile-data terminal frequency. I am constantly reminded of the undercover Police communications I picked up with my earlier Scout tests. A Scout would be a very useful tool for anyone who travels a lot and often attends large-scale events where a number of different radios are used for coordination and security.

One minor annoyance with the AR8000 operating in it's Remote(programming) mode, is that I am not able to use the rotary tuning knob to correct for small frequency count errors that show up. Although typically a small error of only five or even 10 KHz is not a big problem when receiving a VERY strong signal. Some of these programming errors may also be due to changes I need to make in the AR8000's default tuning steps.

Besides use of the FM Broadcast band notch filter, there are a number of other readily available filter options that can help reduce annoying pickup of undesired interference. One is from a company that we noted in our earlier Scout review called Mini Circuits. They produce an array of off-the-shelf High and Low Pass filters. These can be used to block reception of signals above or below certain ranges of the RF spectrum that are not of any listening interest. A Mini Circuits BHP-800 is a High Pass filter that blocks pick up of signals below 800MHz. Opto Electronics does offer a couple different models of Mini Circuits filters, but at a much higher price than if you got them directly from Mini Circuits. Contact Mini Circuits at

1-800-654-7949.

If you want your Scout or other equipment to pick up signals from just Cellular phones, you might consider trying a trick I learned some time back: Use a filter called a "duplexer," removed from a junked Cell phone. Old Cell phones can be found at Ham fleamarkets for just a few dollars. The duplexer is used to connect both the receiver and transmitter circuits of the Cell phone to the single antenna connector. The duplexer is a specially designed bandpass filter that passes only those frequencies allocated to Base or Mobile Cellular use(824 to 849MHz and 869 to 894MHz). Typically you would connect your Scout to the Mobile(824 to 849MHz) connector or "port" on the duplexer to log signals from mobile Cell phones.

Accessory Modules for The AR2700 or 8000

In our earlier review(July USSN) on the AR2700 portable scanner, we noted the availability of two accessory modules for it. We finally got the chance to try these in our test AR2700, and we were rightly impressed with what we saw(or rather, heard).

The RU2700 is the digital speech recorder and playback module for the AR2700. It will record up to 20 seconds of receiver audio. Operation of the Record and Playback functions is controlled by way of the main keyboard: To set the module into Record mode, press the 2nd Function key on the side of the AR2700, then press, and hold, the Number 4 Key; to playback a recording, press the 2nd Function key, then momentarily press the Number 4 key. While this is somewhat eurogonomicly awkward, it is at least easy to remember. It would be nicer if the Record mode, could say be activated by way of a single key stroke, or even by the 2700's squelch. It would also be nice if the Digital Audio Recorder was setup with two or four memory "addresses." This would permit saving one recording, while recording a new passage at another address. You can at least save part of an old recording by aborting part way through a newer one. The remaining portion of the original one is preserved. Quality of the playback audio is very good. Live audio on the AR2700 typically has a bit of background "hiss" with it. This is filtered out by the Recorder module. Recorded audio can be played back any number of times. Storage retention of recorded material is independent of the '2700's battery. Storage life of recorded material is estimated to be about seven years, or more. During Record and Playback operation, the S-meter portion of the LCD display functions as a elapse time indicator. The digital voice recorder is very handy to have in a scanner for recording significant passages from certain transmissions, including things like station ID's, incident locations, crime suspect descriptions, and phone numbers (spoken or Dual-Tone Multifrequency (DTMF) . . .).

Installation of the Recorder module is easy. It merely plugs into a set of pins on the receiver's intermediate frequency (IF) Printed Circuit (PC) board. Installation does require the removal of the rear half of the case along with the IF PC board. One missing component with the Speech Recorder module I tried was that of a detailed installation and usage guide. EDCO, the main distributor of AOR products here in the US claims to have these available, and they are normally supplied with these modules. This would be a necessity for most anyone not already familiar with the internal layout of the AR2700.

The DS2700 is another VERY useful module that's available for the AR2700. It's designed to descramble voice transmissions scrambled with a format known as "frequency inversion." This type of speech scrambling has been used in two-way communications for many years, and although it provides very little in the way of "real" voice security, it is used on many Public Safety and Commercial radio systems as a low-cost way of conducting confidential communications. It has also become popular as a low-cost voice encryption scheme for certain Consumer communications equipment such as cordless phones.

Installation and use of the DS2700 is similar to that of the RU2700 module. Activation of the descrambler is by way of activating the 2nd Function level button, then pressing the Down Arrow key. Activation of the descrambler is global to all memory channels and the Variable Frequency Oscillator (VFO). It would be nice if the descrambler could be set to specific memory channels however.

One very nice feature of the DS2700 is the ability to adjust the descrambling "pilot tone." Without getting into the theory of inversion scrambling, this would best be equated with adjusting a High Frequency (HF) receiver's Beat Frequency oscillator (BFO) for best reception of a Single Sideband or Continues Wave (CW) signal. Adjustment of the pilot tone frequency is done by turning the rotary tuning knob on the top of the AR2700. The adjustment feature is very handy, as even though 90 percent or so of voice inverted radios make use of only one or two possible "standard" pilot tones, some nonstandard tones are still used. I counted 42 separate tone frequencies that could be dialed in. I suspect that the pilot tone is referenced to a clock based on the 2700's own Centeral Prossesing Unit (CPU) clock. This help make the tones very stable and very repeatable. One small criticism I have with the audio is that I think they could have been a bit more careful in the design of the descrambler to provide better pilot tone "cancellation," as you can hear some pilot tone leaking through with the receiver audio when the descrambler is ON.

I am also very happy to report that another inversion descrambler module, the DS8000, is also available for the popular AR8000 scanner. The DS8000 appears to be of similar design and operates similarly to the DS2700. We'll let you know what we find out about the DS8000 in a future issue.

USSN

BEGINNER'S CORNER

by Michael Martin

Listen, But Don't Go!

Several years ago, I was working late at the office, and, as usual, I had a scanner on my desk. It was around 9:00PM and suddenly the tactical channel of APD (Atlanta Police Department) came alive. "All units involved in the operation on Houston street, 59 (meet) in the parking lot at International and Ivy Street." Robert, a friend of mine, overheard this and asked what was going on. "Sounds like a raid or something," I told him. I locked in the channel and turned up the volume. Several more transmissions came across and we figured out there was, indeed, a raid going to happen at the strip club on Houston Street. There were about 20 units involved, several transmissions were related to who was going in first, how big the perimeter would be, and what to do with everyone they grabbed.

"You know that's just down the street from us, don't you?" Robert said.

"Robert, you don't want to go down there, the cops have guns and they'll shoot you," I told him. Robert just laughed and said he was leaving. I told him to make sure he didn't go down there, but I knew those words went unheeded. I just shook my head and sat back down at my desk and listened. The raid went down and within 15 minutes, it was over. I heard several calls asking for more transportation to haul off prisoners and many more running NCIC checks. Then I heard a good one. I heard a check request on my friend Robert! What did that idiot do? His check came back clean and all I heard was a 10-4. Maybe he just got stopped for some traffic violation. He couldn't be so dumb as to go to the actual raid itself.

Next day, I got to work early as usual and settled into my desk and turned on my scanner. Nothing much was happening at that hour of the morning. I was just about to turn on my computer when I heard from the back of the room," You were right! I shouldn't have gone down there." It was my friend Robert.

"I heard APD do a check on you last night. What happened?" I asked him.

"Well, I left and headed down to the parking lot so I could sit and watch what was going on, when about five cops jumped out of nowhere with their guns drawn and told me to get out of the car! They had me spread eagle over the hood of my car and frisked me down. They wanted to know what I was doing here as this was a police operation zone. Man. I was so scared that I almost wet my pants."

Well, nothing much happened to Robert that night except to get read the riot act from the police for coming into a potentially dangerous area. He violated the one major rule of scanning. Listen, but don't go! Sit at your scanner, listen to it all, and then watch it on television or read about it in the newspaper tomorrow. Why put yourself at potential risk by going where you have no business? Sure it would be exciting to watch a raid or shootout go down. What if there were shots fired? What if you just so happened to look like the person they were after? All you are going to do is get in the way, or possibly arrested! Now, just how are you going to explain that to your spouse or even your boss when you don't show up to work the next day because you are sitting in jail? And don't forget the judge! He sure as heck isn't going to be very understanding, either.

I spent about nine years working as a paramedic in the metro Atlanta area, and saw plenty of action. I got to crawl into cars that were turned over, tend shooting victims, and I even got to stand by while the local police did perform a raid. Yes, it was exciting. Yes, it was dangerous. But I was paid to do that. It was MY job and I didn't want anyone who didn't have any business there interfering with it.

Again, stay home, watch COPS or Emergency 911 or other programs like that if you want to see what is happening. Better yet, join your local police or fire department if you want in the action.

USSN

NEW!! SCANCAT GOLD IMPROVED!
Since 1989, The Recognized Leader in Computer Control
Once you use SCANCAT with YOUR radio, you'll NEVER use your radio again WITHOUT SCANCAT!
SCANCAT supports most radios by:
AOR, DRAKE, KENWOOD, ICOM, YAESU and JRC (NRD)
Plus PRO-2005,6 & 2035/OS456, Lowe HF-150, and Watkins-Johnson HF-1000
SCANCAT 6.0 FEATURES
• Search between any 2 frequencies.
• Search by ANY increment.
• Create Disk files.
• Import from most text formats to a working SCANCAT file.
• Log found frequencies to files while scanning.
• Scan Disk Files Frequencies.
• Spectrum Analysis to Screen OR Printer.
SCANCAT - GOLD FEATURES
We simply don't have the space to tell you ALL the new GOLD features
SCANCAT-GOLD includes ALL ABOVE 6.0 FEATURES PLUS
• Link up to 15 frequency disk files.
• D-BASE IMPORT w/DUPLICATE filters.
• Scan HF & VHF Icom's simultaneously.
• PRINT to ANY printer, or Disk File.
• Automatic BIRDIE LOCKOUT.
• Link up to 15 search banks.
• IMPORT virtually any database.
• Search by CTCSS & DCS TONES with PRO2005,6/2035 (& ICOM/DC440).
• MULTIPLE search filters.
PLUS - POWERFUL COMMERCIAL FEATURES SUCH AS:
• Demographic search for frequency co-ordination and 2-way Usage Analysis.
• Detailed logging to ASCII type files with DATE, TIME, Sig Str, Air Time
• UNLIMITED file sizes with our exclusive SCANCAT filing method.
• Exclusive "MACRO" control by frequency of Dwell, Hang, Resume. Sig. Treshhold and even 6 separate programmable, audible alarms.
• Command line options for TIMED ON/OFF (Unattended) logging/searches.
**SCANCAT IS NOT COPY PROTECTED —USE ON AS MANY COMPUTERS AS YOU NEED **
SCANCAT will run on virtually ANY 640K computer, EVEN HP-100XLT PALMTOP!
SCANCAT comes ready to run ALL supports radios within only ONE program. SCANCAT makes your listening hobby a breeze! Plus, the included SCANPORT allows you to convert your favorite BBS, D Base or Text Files to a running SCANCAT file: 100+ Page manual included. Requires a 640K MS-DOS computer w/RS-232C serial port - hard disk recommended. Manufacturer's Interface not included.
CALL or WRITE for FREE information or our $5.00 FULLY OPERATIONAL DEMO DISK (includes shipping/handling). ORDER NOW & RECEIVE as a BONUS, FOUR SCANCAT FREQUENCY FILES!
SCANCAT GOLD $94.95 UPGRADE $24.95
SCANCAT 6.0 $79.95 from any version
SQUELCH DETECT CABLES $24.95
OPTOScan456 kit $299 ($10 s/h)
PLUS $5.00 SHIPPING & HANDLING $7.50 FOREIGN
Order OS456 board & SCANCAT-GOLD combined and receive our $15 frequency disk. FREE!
Order direct or contact your favorite dealer
COMPUTER AIDED TECHNOLOGIES
P.O. Box 18285 Shreveport, LA 71138
FREE DEMO ON BBS
Orders Only (318) 636-1234 - FAX (318) 686-0449 (24 hrs)
Live Tech Support - (318) 687-2555 (9 a.m. - 1 p.m. Central M-F)
Nitetime BBS (SCANCAT File Area) (318) 631-3082 (7 p.m. - 6 a.m. Central)
U.S. Scanner Readers Only - FREE Starter Freq. Disk of 10 Files - With Your Order

SPECTRUM

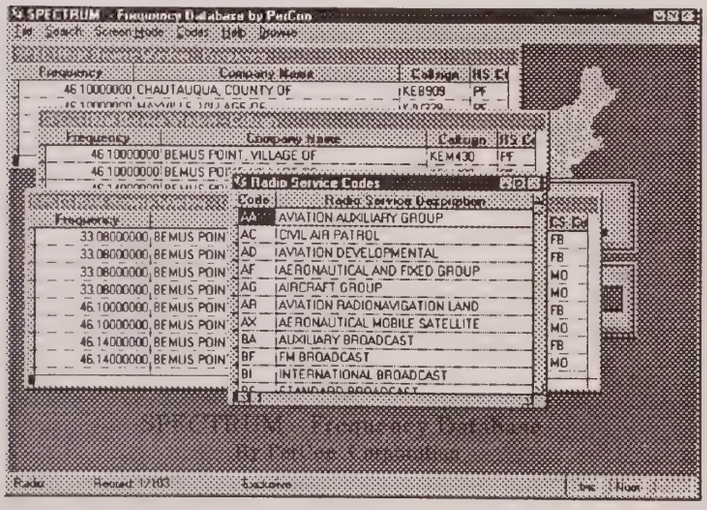
Frequency Database CDROM
For WIN / DOS / MAC

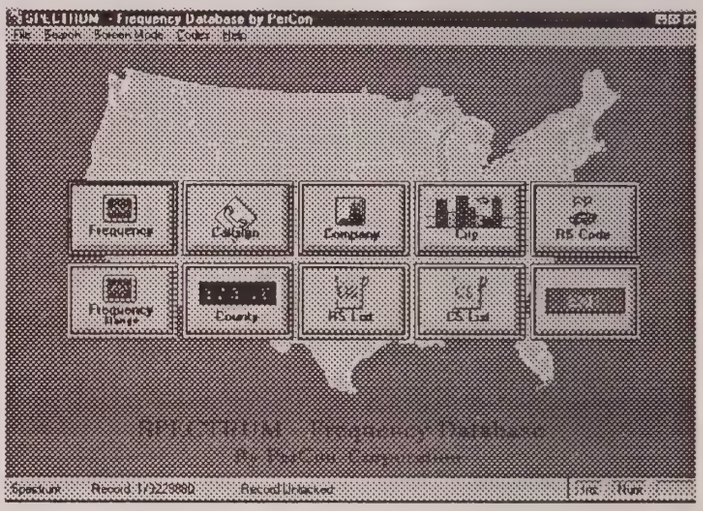
Operating System Compatible

SPECTRUM *is a frequency database with over 3 Million records. Data is extracted from the FCC Master Frequency Database. The Database includes records for Police, Fire, Hospitals, Businesses, State and Local Governments, Airlines, Utilities, Hotels, Theme Parks, Taxis, Freight Companies, Phone Companies, and much more. Frequencies range from DC to Daylight.*

Fields include: Frequency, Callsign, Radio Service Code, Class Of Station, DBA Name, Transmitter City / County / State, Transmitter Latitude and Longitude,and Number of Mobiles for Vehicle, Marine, Air, Portable and Pagers.

The system for DOS/WIN requires a 386 Processor or above, VGA video display(CGA/EGA/VGA for DOS),4 Meg of Memory, a minimum of 4 Meg of Hard Disk, CDROM drive, mouse, a printer for reports, Dos 6.0 or above and Win 3.1 or above. For the MAC, System 7.5, CDROM drive, Mouse, 4 Meg of Hard Disk minimum, and 4 Meg of memory.





SPECTRUM *comes as a complete system, requiring no installation or setup. The program is executed from the CDROM. The program allows the user to extract data for display in a Browse Screen,Export to a UFDBF, or to 80 / 132 column printed reports. Data can be extracted by a Frequency/Range in a Region, Callsign in a State, DBA Name in a State, Radio Service Code in a City, all Frequencies in a County, or all Frequencies in a City. The user is prompted for all required search parameters. The program is extremely easy to use and is suitable for entry-level as well as advanced scanner enthusiasts.*

The database is in a Dbase III , IV ,or FoxPro Compatible file format. Export to UFDBF.

PerCon also has New Ham, Ham/Repeater, Aviation and other Frequency Database CDROMS.

$ 29.95

Additional S&H For UPS Blue is $7.50

PerCon Corporation
4906 Maple Springs / Ellery Road
Bemus Point, NY 14712
(716) 386-6015 Fax (716) 386-6013

PUBLIC SAFETY COMMUNICATIONS

by Ed Muro

Potpourri

Welcome to another addition of *U.S. Scanner News'* Public safety column. In the last issue I mentioned that every month at the end of each column I would like to profile a specific public safety agency. To do that I need your help or every profile will be about a department in the Northeast, something our readers out west might get bored with quickly. So, I urge you to write in with any information you can offer.

This month's column will be a hodge podge of various bits and pieces of information I have been gathering for the last several months. I am going to start off with a letter that was forwarded to me by the *U.S.S.N.* staff from John Cosimano, of Laurel Maryland.

John writes:

On Sunday evening, the 18th of December 1994, my wife and I left our home in Laurel, MD to step out for dinner. We noticed in the sky about a half mile south of us, directly over the community hospital, what we thought was the Medi-vac helicopter hovering and preparing to land at the hospital's landing pad. Great, I thought, let's go watch it land. In the back of my mind, I thought of grabbing my hand-held scanner to listen to the action; I quickly decided against it. I figured the most I'd hear is the helo giving patient's vital statistics to the hospital. So, off we went.

As we approached the area, I noticed the bird wasn't going to land at all. In fact, it had two search lights going rummaging through the brush fields around the hospital. As we got even closer, I counted no fewer than 10 Prince George's County Police (PGCP) cars. They were searching for someone.

I quickly raced back home to grab my scanner. I found out that three law enforcement agencies were involved in the search: PGCP, The City of Laurel Police, and the Maryland State Police (MSP). They were searching for a patient who was missing from the hospital. This is a small community hospital and I do not believe they have a psych ward. There was something else to the story . . . What follows are the frequencies that I monitored. The Laurel City Police could be heard on 453.1500MHz. PGCP were heard on 495.212MHz, 495.6875MHz, and 494.7375MHz. In addition, the MSP helicopter was heard on 44.74 MHz. There were also some very brief communications by the MSP on 39.32 MHz. The only frequency on which there appeared to be unit-to-unit communications was 494.7375MHz.

Each agency had a specific job to do. It was the duty of PGCP to secure and search the immediate area on foot and with dogs (K9). The job of the Laurel Police was to attempt to located the cab that the individual left in. (by monitoring radio communications, John learned that a female patient walked across the street to a pay phone and telephoned a cab to pick her up). The city was attempting to contact the cab dispatcher to find out where the taxi was headed. The Maryland State Police brought in the helicopter and was coordinating the search from the air.

The entire incident, from the time the patient left the hospital to the time they located the cab, took approximately 45 minutes. I have not found out exactly why it was important to capture this person and why they required all that manpower. Anyway, it was indeed a fun scanning experience, and it reminds me of why I ever bought my scanner in the first place. Since then I have begun to scan hospital security on a regular basis.

John, Thanks for your very informative letter.

I received another letter in late July from Ed Heyer, a retired police officer from Cicero, Il. In his retirement Ed has taken up publishing local scanner guides for his area. Ed is looking for a complete frequency chart and channel set up for both the Chicago Fire Department and the Cicero Fire Department. In addition, Ed would like to know if anyone can supply him with the frequencies used by the helicopter based at Loyola Hospital in Maywood and the frequency used by the Chicago Marine Bureau. If anyone can help with this information, please send it to me and I will forward it to Ed.

Terrorist Alert:

Could an area you frequent be targeted by international terrorists? That's exactly what the employees and passengers at the Delta Airlines Terminal in New York's John F. Kennedy International Airport found out recently. The F.A.A. recently placed John F. Kennedy Airport on a Level 4 alert, this is the first time the airport has been placed on a level four alert since the Gulf War. Security has also been tightened at the other major airports in the Tri-state region. The airport falls under the jurisdiction of the Port Authority (of New York and New Jersey) Police. The Port Authority Police can be monitored on *453.375* and *453.650MHz.* In addition to an increased police presence there has also been increased radio traffic on United States Customs Service frequencies.

Department Update:

In the February issue I discussed monitoring law enforcement operations in the state and federal parks. In that article I briefly detailed the United States Park Police. This is a department most people have probably never heard of. It has currently, once again, been thrown into the national media, in regards to the botched investigation of the death of White House consul Vince Foster, as the Senate Banking Committee investigates the Clinton's White Water dealings.

The following information is a history of the department and will inform you on this obscure police department.

The United States Park Police is a unit of the Department of the Interior, National Park Service, National Capital region, with jurisdiction in all National Park Service areas and certain other Federal and State lands. The history of the Park Police predated that of both the Department of the Interior and the National Park Service.

Created in 1791 by our first president, George Washington, the U.S. Park Police have been on duty in our federal parks for more than

200 years. Originally, the authority of the Park Watchmen, as they were then known, was restricted to Federal property in the District of Columbia. In 1882, the Park Watchmen were given the same "powers and duties" as the Metropolitan Police in the District of Columbia. Since then, the duties of the U.S. Park Police have been synonymous with that of an urban police department.

The expansion of police authority and responsibility of the U.S. Park Police outside of the District of Columbia began in 1929 with the assignment of officers to the George Washington Memorial Parkway. The U.S. Park Police have responsibility for providing law enforcement services within the District of Columbia, as well as other Federal reservations, in the Washington metropolitan area, New York, and San Francisco. They are also frequently requested to provide protection for dignitaries, such as the president of the united States and visiting foreign heads of state, and assistance to other areas of the National Park Service and other law enforcement agencies during law enforcement emergencies.

Initial appointments are made to the Washington metropolitan area where the largest contingent of officers is located. Officers may be reassigned to the Gateway National Recreation Area in New York City or to the Golden Gate National Recreation Area in the City of San Francisco, California. Officers may also be detailed to duty in any area of the National Park Service when the need arises.

In the New York City area the U.S. Park Police may be monitored on *166.325.*

Park Police Radio Codes

10-0 - Caution
10-1 - Signal weak
10-2 - Signal good
10-3 - Stop transmitting
10-4 - Acknowledge
10-5 - Relay
10-6 - Busy - unless urgent
10-7 - Out of service
10-8 - In service
10-9 - Repeat
10-10 - Fight in progress
10-11 - Dog problem
10-12 - Stand by
10-13 - Weather report
10-14 - Prowler
10-15 - Civil disturbance
10-17 - Meet complainant
10-18 - Urgent
10-19 - Return to...
10-20 - Location
10-21 - Call...by land line
10-22 - Disregard
10-23 - Arrived at location
10-24 - Assignment completed
10-25 - Report to...
10-26 - Rush - detaining subject
10-27 - License/permit information
10-28 - Registration information
10-29 - Check for wants
10-31 - Crime in progress
10-32 - Man with gun
10-33 - Emergency
10-34 - Riot
10-35 - Major crime alert
10-36 - Time check
10-37 - Suspicious vehicle
10-38 - Stopping vehicle
10-39 - Use lights/siren
10-40 - No lights/siren
10-41 - Beginning shift
10-42 - Ending shift
10-44 - Permission to leave
10-45 - Animal carcass at..
10-46 - Assisting motorist
10-47 - Emergency road aid at
10-50 - Accident
  PI - with injuries
  PD - property damage
  F - with fatality
10-51 - Wrecker needed (In NYC Casino Towing is used)
10-52 - Ambulance needed
10-53 - Roadblock (at...)
10-55 - Drunk driver
10-56 - Drunk
10-57 - Hit and run
10-58 - Direct traffic
10-63 - Prepare to copy
10-66 - Message canceled
10-69 - Message received
10-70 - Fire alarm
10-71 - Nature of fire?
10-72 - Fire - progress report
10-76 - En route to.
10-77 - E.T.A.
10-78 - Need?
10-80 - In pursuit
10-85 - Delayed (due to...)
10-91 - Pick up prisoner
10-92 - Illegally parked vehicle
10-93 - Blockade
10-95 - Suspect in custody
10-96 - Mental case
10-97 - Radio check
10-99 - Wanted/stolen

This month's department profile takes a look at the Suffolk County, New York Police Department. A fairly new department, this department has jurisdiction of some of the most pristine tourist attractions on the east coast.

At one time police protection was provided by local villages and the New York State Police. This was at a time when almost the entire county was rural farmland. As the population of the county exploded and many of the western villages turned from farming towns to major suburban communities the need arose for an organized county police force. Many villages on the east end still employ their own police departments and are served as well by the New York State Police and the New York State Park Police.

Once again, feel free to submit your questions or comments to: Eddie Muro, P.O. Box 308, Cedarhurst, New York 11516-0308. Until next time... scan with passion.

USSN

Department Profile:

SUFFOLK COUNTY POLICE DEPARTMENT

Headquarters Yaphank

All channels use PL 146.2Hz. Frequencies with only an input frequency are simplex.

Frequencies

Repeater	Input	Ch.	Usage
155.700	158.790	1	1st Precinct (West Babylon)
154.845	158.910	2	2nd Precinct (Huntington)
155.850	158.850	3	3rd Precinct (Bayshore)
155.910	159.210	4	4th Precinct (Hauppauge)
155.985	158.745	5	5th Precinct (Patchogue)
155.580	159.150	6	6th Precinct (Corum)
155.685	158.895	7	(G) Command (Yaphank)
" "	" "		Highway/Marine (Yaphank)
" "	" "		Emergency Service (Ronkonkoma)
-	156.030	8	(B) Car-to-car
155.790	159.030	9	(C) Data
155.655	158.730	10	(E) Detectives, Anti-crime
-	155.370	11	(D) Statewide (mutual aid)
-	155.475	12	(F) National police channel
-	154.115		(H) District Attorney (Smithtown)

Radio codes:

File 1 - Stolen vehicle
Code 1 - Stolen vehicle
Code 2 - Auto used in a crime
Code 3 - Set up roadblocks
Code 4 - Wanted for hit and run
Code 5 - Wanted or escaped person
Code 6 - Missing/runaway person
Code 7 - Wanted for burglary
Code 8 - Wanted fro robbery
Code 9 - Lost property
Code 10 - Stolen property
Code 11 - Wanted for assault
Code 12 - Wanted for homicide
Code 13 - Wanted for kidnapping
Code 16 - Lost/stolen plates

Ten Code

10- 1	Officer needs help
10- 2	Larceny
10- 3	Burglary
10- 4	Acknowledge
10- 5	Homicide
10- 6	Kidnapping
10- 7	Criminal mischief
10- 8	Sick/injured
10- 9	Inhalator
10-10	Auto accident
10-11	Call HQ
10-12	Hit and run
10-12	Return to command
10-13	Call command
10-14	Stolen car
10-15	Robbery/holdup
10-16	Fight
10-17	Disturbance
10-18	Meal
10-19	Gone on arrival
10-20	Drunk driver
10-22	Unruly group
10-23	Request detective
10-24	Fire
10-25	Prowler
10-26	Escort
10-27	In service
10-28	Out of service
10-29	Verify registration
10-30	Missing person
10-31	Lost child
10-32	Prisoner transport
10-33	Switch to ch B
10-34	Suspicious person
10-35	State location
10-36	Arrived on scene
10-38	Completed
10-39	Any messages?
10-40	Prisoner food
10-41	Bank robbery
10-43	Bomb scare
10-45	Relieve unit
10-45A	Listing requested
10-47	Dangerous/armed
10-50	On call from home
10-51	Registration check
10-55	Switch to ch C
10-65	Identify unit
10-66	Vehicle service

Unit Identifiers

1 - 99: Commanders
101-150: 1st pct
201-250: 2nd pct
301-350: 3rd pct
401-450: 4th pct
501-550: 5TH pct
601-650: 6TH pct
901-919: Highway
921-929: Highway safety

Detective Radio Identifiers:

Adam, Boy Charlie, King, Lincoln, Nora, Victor
David - Auto theft
Frank - Homicide
Delta - Precinct crime control
George - Narcotics
Echo - Precinct detectives
Mary - Burglary
Edward - Arson
Paul - District attorney

COUNTY SHERIFF - Headquarters Riverhead

Freq.	Channel	Usage
155.415	A	Dispatch
156.030	B	Car-to-car
155.790	C	Suffolk county data (SCPD channel 9)
155.370	D	State wide system (SCPD channel 11)
155.685		SCPD command (SCPD channel 7)

FREQUENCY FORUM

by O.E. Simonson

June FCC Updates

The information in this column is raw FCC Data and, as such, contains duplications and typos.

Listed below are **Public Safety** licenses that have been recently issued by the Federal Communications Commission. Note that many of these may be licenses for additional transmitter sites, expired licenses, and so forth, and may not necessarily be "new" frequencies. The services represented are PF - Fire, PH - Highway, PL - Local Government, PM - Emergency Medical, PO - Forestry, PP - Police, PS - Special Emergency, GF - 866 Conventional Public Safety (National Plan), GP - Conventional Public Safety, YF - 866 Public Safety Trunking (National Plan), YP - Trunked Public Safety, GA - 900 MHz Conventional Public Safety, YA - 900 MHz Trunked Public Safety. There may be listings for municipalities that have licensees in other services also, such as the Power Radio Service - IW.

City	Licensee	Callsign	Freq	Sr.
	Alabama			
	ALABAMA STATE DOCKS	WPHS291	460.4375	PL
	ALABAMA, STATE OF	WNDD327	453.7500	PO
	BALDWIN, COUNTY OF	WNJF416	460.5875	PF
	BALDWIN, COUNTY OF	WNJF416	465.5875	PF
	COLBERT, COUNTY OF	WQJ882	158.1500	PH
	DALLAS, COUNTY OF	WPHS483	155.9100	PP
ANNISTON	CALHOUN, COUNTY OF	KYO256	155.0100	PP
ANNISTON	CALHOUN, COUNTY OF	KYO256	155.6700	PP
ANNISTON	CALHOUN, COUNTY OF	KYO256	159.9450	PP
BAY MINETT	BAY MINETTE, CITY OF	WPHW592	155.1000	PL
BIRMINGHAM	JEFFERSON, COUNTY OF	KGI631	453.2500	PL
CHELSEA	CAHABA VALLEY FIRE AND EMERGEN	KNFA343	151.1150	PF
CHELSEA	CAHABA VALLEY FIRE AND EMERGEN	KNFA343	154.4000	PF
COLUMBIANA	SHELBY, COUNTY OF	KIT236	155.0100	PP
ENTERPRISE	ALABAMA, STATE OF	WNFD729	159.1350	PP
FAIRFIELD	FAIRFIELD, CITY OF	WPHW596	155.4900	PL
HAYNEVILLE	HAYNEVILLE, TOWN OF	WPHW990	153.9350	PL
HAYNEVILLE	HAYNEVILLE, TOWN OF	WPHW990	158.8650	PL
HELENA	CAHABA VALLEY FIRE AND EMERGEN	KNFA343	154.4000	PF
HELENA	HELENA, CITY OF	WPHS455	159.3000	PL
HUNTSVILLE	ALABAMA, STATE OF	KBI736	151.1750	PO
HUNTSVILLE	ALABAMA, STATE OF	KBI736	159.3150	PO
KINSEY	KINSEY, TOWN OF	WNDD409	155.0400	PL
MOBILE	MOBILE, COUNTY OF	WPHS220	453.9750	PP
MOBILE	MOBILE, COUNTY OF	WPHS220	458.9750	PP
MUSCLE SHO	MUSCLE SHOALS, CITY OF	WNDD903	154.3400	PF
OPELIKA	OPELIKA, CITY OF	WPHR813	855.4625	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	855.7375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	855.9625	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	856.2125	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	856.4875	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	856.7375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	857.2125	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	857.4875	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	857.9625	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	858.2125	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	858.4875	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	858.7375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	858.9375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	859.2125	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	859.4625	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	859.7375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	859.9375	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	860.2125	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	860.4875	YP
OPELIKA	OPELIKA, CITY OF	WPHR813	860.7625	YP
STEVENSON	STEVENSON, CITY OF	WPCJ202	153.7700	PF
STEVENSON	STEVENSON, CITY OF	WPCJ202	154.1900	PF
TALLADEGA	TALLADEGA, CITY OF	KAB275	154.9800	PL
TROY	ALABAMA, STATE OF	WNFD729	155.0700	PP
TROY	ALABAMA, STATE OF	WNFD729	159.1350	PP
	Arkansas			
	CRITTENDEN MEMORIAL HOSPITAL	KRV225	155.2950	PS
	DESHA, COUNTY OF	KRO474	37.9200	PH
	HOLIDAY ISLAND FIRE DEPARTMENT	WPHW492	154.1900	PF
	SEVIER, COUNTY OF	KSL427	37.1000	PP
	SEVIER, COUNTY OF	KSL427	37.2000	PP
	SEVIER, COUNTY OF	KSL427	37.2400	PP
	WALDO, CITY OF	KLE922	37.1000	PP
	WASHINGTON COUNTY FIRE DISPATC	WPHW602	453.2375	PF
	WASHINGTON COUNTY FIRE DISPATC	WPHW602	453.7500	PF
	WASHINGTON COUNTY FIRE DISPATC	WPHW602	458.2375	PF
	WASHINGTON COUNTY FIRE DISPATC	WPHW602	458.7500	PF
ARKADELPHI	CLARK, COUNTY OF	WPCB356	154.7700	PP
ARKADELPHI	CLARK, COUNTY OF	WPCB356	155.7300	PP
CENTER RID	CONWAY COUNTY RURAL FIRE DEPAR	WPHU788	46.0600	PF
CENTER RID	CONWAY COUNTY RURAL FIRE DEPAR	WPHU788	453.6000	PF
DELL	DELL, CITY OF	WPHT669	460.6000	PP
DELL	DELL, CITY OF	WPHT669	465.6000	PP
DEQUEEN	SEVIER, COUNTY OF	KSL427	37.1000	PP
ELAINE	ELAINE, CITY OF	WNSV913	460.6250	PF
FAYETTEVIL	WASHINGTON COUNTY FIRE DISPATC	WPHW602	154.3550	PF
FAYETTEVIL	WASHINGTON COUNTY FIRE DISPATC	WPHW602	453.7500	PF
JONESBORO	JONESBORO, CITY OF	WNSR576	856.2875	YO
JONESBORO	JONESBORO, CITY OF	WNSR576	857.2875	YO
MORRILTON	CONWAY COUNTY RURAL FIRE DEPAR	WPHU788	46.0600	PF
MORRILTON	CONWAY COUNTY RURAL FIRE DEPAR	WPHU788	453.6000	PF
MORRILTON	CONWAY COUNTY RURAL FIRE DEPAR	WPHU788	458.6000	PF
NEWPORT	NEWPORT, CITY OF	WNSU385	155.0250	PL
NORTH LITT	NORTH LITTLE ROCK, CITY OF	WNST608	453.2750	PL
RUSSELLVIL	RUSSELLVILLE, CITY OF	WQL500	153.8900	PF
RUSSELLVIL	RUSSELLVILLE, CITY OF	WQL500	154.3100	PF
RUSSELLVIL	RUSSELLVILLE, CITY OF	WQL500	460.6000	PF
RUSSELLVIL	RUSSELLVILLE, CITY OF	WQL500	465.6000	PF
SPRINGDALE	BENTON, COUNTY OF	WPHS330	460.1250	PP
SPRINGDALE	BENTON, COUNTY OF	WPHS330	465.1250	PP
SPRINGDALE	SPRINGDALE, CITY OF	WPHR995	460.4250	PL
	Arizona			
	BUCKSKIN FIRE DISTRICT	WNGB547	153.8450	PF
	BUCKSKIN FIRE DISTRICT	WNGB547	154.4000	PF
	GRAHAM, COUNTY OF	KNGB268	155.4750	PP
	TUCSON, CITY OF	WNNF913	858.1500	GP
	TUCSON, CITY OF	WNNF913	859.0750	GP
	WELLTON, TOWN OF	WQF253	154.9650	PL
	WINKELMAN, TOWN OF	WPHS236	158.7900	PP
POMERENE	POMERENE VOLUNTEER FIRE DEPART	WPHU786	153.9500	PF
SAN LUIS	SAN LUIS, CITY OF	WNDB553	155.5500	PP
SAN LUIS	SAN LUIS, CITY OF	WNDB553	156.2100	PP
TUCSON	TUCSON, CITY OF	WNNF913	858.1500	GP
TUCSON	TUCSON, CITY OF	WNNF913	859.0750	GP
	California			
	CONTRA COSTA, COUNTY OF	KA3744	46.0600	PF
	CONTRA COSTA, COUNTY OF	KA3744	46.1800	PF
	CONTRA COSTA, COUNTY OF	KA3744	46.2200	PF
	CONTRA COSTA, COUNTY OF	KA3744	46.2600	PF
	CONTRA COSTA, COUNTY OF	KA3744	46.3400	PF
	CONTRA COSTA, COUNTY OF	KA3744	46.4200	PF
	CONTRA COSTA, COUNTY OF	KA3744	153.8300	PF
	CONTRA COSTA, COUNTY OF	KA3744	154.2650	PF
	CONTRA COSTA, COUNTY OF	KA3744	154.2800	PF
	CONTRA COSTA, COUNTY OF	KA3744	154.2950	PF
	CONTRA COSTA, COUNTY OF	KA3744	154.3850	PF
	ELDORADO, COUTNY OF	WNSU692	46.0800	PF
	ELDORADO, COUTNY OF	WNSU692	46.1400	PF
	ELDORADO, COUTNY OF	WNSU692	46.4200	PF
	ELDORADO, COUTNY OF	WNSU692	460.5875	PF
	ELDORADO, COUTNY OF	WNSU692	460.6375	PF
	ELDORADO, COUTNY OF	WNSU692	465.5875	PF
	ELDORADO, COUTNY OF	WNSU692	465.6375	PF
	MONTEREY REGIONAL WASTE MANAGE	KNDE702	155.0400	PL
	NATIONAL CITY, CITY OF	KRJ771	154.2650	PF
	NATIONAL CITY, CITY OF	KRJ771	154.2800	PF
	NATIONAL CITY, CITY OF	KRJ771	154.2950	PF
	NATIONAL CITY, CITY OF	KRJ771	154.4150	PF
	PLACER, COUNTY OF	WNPZ854	161.2650	PP
	POINT MONTARA FIRE PROTECTION	KJK740	46.1400	PF
	POINT MONTARA FIRE PROTECTION	KJK740	153.8300	PF
	RIVERSIDE, COUNTY OF	WNML669	154.1300	PF
	RIVERSIDE, COUNTY OF	WNML669	154.4150	PF
	RIVERSIDE, COUNTY OF	WNML669	154.4450	PF
	SAN DIEGO, COUNTY OF	KMC239	159.0150	PH
	YOLO, COUNTY OF	KO5765	155.2350	PS
	YUBA CITY, CITY OF	WNST865	154.1750	PF

City	Licensee	Callsign	Freq	Sr.
	YUBA CITY, CITY OF	WNST865	154.3400	PF
	ZAYANTE FIRE PROTECTION DISTRI	WNSU239	153.7700	PF
	ZAYANTE FIRE PROTECTION DISTRI	WNSU239	154.1900	PF
	ZAYANTE FIRE PROTECTION DISTRI	WNSU239	154.2800	PF
	ZAYANTE FIRE PROTECTION DISTRI	WNSU239	154.3250	PF
	ZAYANTE FIRE PROTECTION DISTRI	WNSU239	154.4150	PF
ALAMEDA	ALAMEDA, CITY OF	WNST571	154.1300	PF
ARBUCKLE	YOLO COUNTY COMMUNICATIONS	KFF263	154.4450	PF
AUBURN	PLACER, COUNTY OF	WNPZ854	161.2650	PP
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	460.0250	PM
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	463.0250	PM
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	463.0500	PM
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	463.0750	PM
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	463.1500	PM
BAKERSFIEL	KERN AMBULANCE CO	WNVM955	463.1750	PM
BAKERSFIEL	ROSEDALE UNION SCHOOL DISTRICT	WNDC883	155.2200	PS
BALDWIN PA	CALIFORNIA, STATE OF	KB0571	42.3400	PP
BALDWIN PA	CALIFORNIA, STATE OF	KB0571	42.8800	PP
BARSTOW	REGIONAL FIRE PROTECTION AUTHO	WNCP524	154.2050	PF
BARSTOW	SAN BERNARDINO, COUNTY OF	KYU507	151.1450	PO
BELVEDERE	BELEVEDERE, TOWN OF	KNCA569	158.8650	PL
BELVEDERE	BELEVEDERE, TOWN OF	KNCA569	158.8800	PL
BEVERLY HI	BEVERLY HILLS, CITY OF	KMG655	153.5900	IW
BIG SUR	CALIFORNIA, STATE OF	KTB219	151.2650	PO
BISHOP	BISHOP, CITY OF	KVJ867	154.8750	PP
BISHOP	BISHOP, CITY OF	KVJ867	155.0100	PP
BISHOP	BISHOP, CITY OF	KVJ867	159.0900	PP
BLYTHE	BLYTHE CITY OF	WNTZ596	956.3562	IW
CLEARLAKE	KONOCTI UNIFIED SCHOOL DISTRIC	WNSU966	155.2800	PS
CORNING	CORNING, CITY OF	KGR200	154.4000	PF
COVINA	COVINA, CITY OF	KMA507	154.7250	PP
COVINA	COVINA, CITY OF	KMA507	155.4900	PP
COVINA	COVINA, CITY OF	KMA507	155.6250	PP
GOLD RUN	PLACER, COUNTY OF	WNPZ854	160.5450	PP
LANCASTER	EASTSIDE UNION SCHOOL DISTRICT	KSJ229	155.2650	PS
LIVINGSTON	LIVINGSTON, CITY OF	KMH518	154.8900	PP
LIVINGSTON	LIVINGSTON, CITY OF	KMH518	155.6850	PP
LOS ALTOS	FOOTHILL COLLEGE	WNCD310	154.8300	PP
MARINA	MONTEREY REGIONAL WASTE MANAGE	KNDE702	153.8000	PL
MARIPOSA	CALIFORNIA, STATE OF	KNCC246	158.8950	PL
NEWPORT BE	ORANGE, COUNTY OF	KDN669	851.0625	GP
OLINDA	ORANGE, COUNTY OF	KDN669	851.0625	GP
ORANGE	ORANGE, COUNTY OF	KDN669	851.0625	GP
PLACERVILL	ELDORADO, COUTNY OF	WNSU692	46.0800	PF
PLACERVILL	ELDORADO, COUTNY OF	WNSU692	46.1400	PF
PLACERVILL	ELDORADO, COUTNY OF	WNSU692	46.2200	PF
PLACERVILL	ELDORADO, COUTNY OF	WNSU692	46.4200	PF
POMONA	CALIFORNIA, STATE OF	KCQ240	42.8800	PP
ROLLING HI	LOS ANGELES, CITY OF	WNSS857	854.9625	GP
SACRAMENTO	CALIFORNIA, STATE OF	KBE459	155.4450	PP
SACRAMENTO	CALIFORNIA, STATE OF	KBE459	155.5050	PP
SACRAMENTO	CALIFORNIA, STATE OF	KMW43	169.4750	PO
SACRAMENTO	CALIFORNIA, STATE OF	KMW43	169.5750	PO
SAN FRANCI	ACME WESTERN AMBULANCE	WNCT273	155.2950	PS
SANTIAGO P	ORANGE, COUNTY OF	KDN669	851.0625	GP
SHINGLE SP	RESCUE FIRE PROTECTION DISTRIC	KZR541	46.3400	PF
SHINGLE SP	RYDER STUDENT TRANSPORTATION S	WNHE741	155.2350	PS
SOLEDAD	CALIFORNIA, STATE OF	KSQ333	151.2500	PO
SOQUEL	CALIFORNIA, STATE OF	KXZ25	151.2650	PO
SOQUEL	CALIFORNIA, STATE OF	KXZ25	151.3550	PO
SOQUEL	CALIFORNIA, STATE OF	KXZ25	151.3700	PO
SOQUEL	CALIFORNIA, STATE OF	KXZ25	159.3000	PO
SOQUEL	CALIFORNIA, STATE OF	KXZ25	159.3300	PO
WASCO	KERN AMBULANCE CO	WNVM955	463.1750	PM
WHEATLAND	WHEATLAND, CITY OF	KNJJ850	154.2500	PF
WOODSIDE	CALIFORNIA, STATE OF	KXY79	151.2650	PO
WOODSIDE	CALIFORNIA, STATE OF	KXY79	151.3550	PO
WOODSIDE	CALIFORNIA, STATE OF	KXY79	151.3700	PO
WOODSIDE	CALIFORNIA, STATE OF	KXY79	159.3000	PO
WOODSIDE	CALIFORNIA, STATE OF	KXY79	159.3300	PO

Colorado

City	Licensee	Callsign	Freq	Sr.
	AURORA, CITY OF	WPHW993	451.1000	IW
	BOULDER, CITY OF	WPHR958	451.6875	IW
	ERIE, TOWN OF	WPHU967	451.4125	IW
	ROUTT, COUNTY OF	WGT341	462.9500	PS
	ROUTT, COUNTY OF	WGT341	462.9750	PS
	ROUTT, COUNTY OF	WGT341	463.0000	PS
	ROUTT, COUNTY OF	WGT341	463.0250	PS
	ROUTT, COUNTY OF	WGT341	463.0500	PS
	ROUTT, COUNTY OF	WGT341	463.0750	PS
	ROUTT, COUNTY OF	WGT341	463.1000	PS
	ROUTT, COUNTY OF	WGT341	463.1250	PS
	ROUTT, COUNTY OF	WGT341	463.1500	PS
	ROUTT, COUNTY OF	WGT341	463.1750	PS
	WESTMINSTER, CITY OF	WPHR957	451.2625	IW
GRAND JUNC	GRAND JUNCTION, CITY OF	WNDA517	453.6750	PL
GUNNISON	HINSDALE, COUNTY OF	WPHU813	153.9050	PL
LAKE CITY	HINSDALE, COUNTY OF	KNET688	155.7750	PL
LAKE CITY	HINSDALE, COUNTY OF	WPHU813	153.9050	PL
LAKE CITY	HINSDALE, COUNTY OF	WPHU813	158.7600	PL
MEEKER	RIO BLANCO FIRE PROTECTION DIS	WPHS341	154.3550	PF
NEDERLAND	NATIONAL SKI PATROL SYSTEM INC	KVX860	155.1600	PS
NEDERLAND	NATIONAL SKI PATROL SYSTEM INC	KVX860	155.2950	PS

Connecticut

City	Licensee	Callsign	Freq	Sr.
	CENTER GROTON FIRE DISTRICT	WSW646	33.9000	PF
	CENTER GROTON FIRE DISTRICT	WSW646	33.9200	PF
	MANCHESTER, TOWN OF	WPHQ583	456.4125	IW
BERLIN	BERLIN, TOWN OF	KGL644	33.9400	PF
BERLIN	BERLIN, TOWN OF	KGL644	153.8300	PF
BERLIN	BERLIN, TOWN OF	KGL644	154.2650	PF
BERLIN	BERLIN, TOWN OF	KGL644	154.2950	PF
BERLIN	BERLIN, TOWN OF	KGL644	154.3400	PF
BERLIN	BERLIN, TOWN OF	KGL644	159.3300	PF
HARWINTON	HARWINTON, TOWN OF	WNSU505	155.6550	PP
KENSINGTON	BERLIN, TOWN OF	KCW347	45.1200	PL
MONROE	MONROE, TOWN OF	WPHX208	47.8800	IW
NEWINGTON	CONNECTICUT HUMANE SOCIETY	WNDE721	47.4600	PS
NEWINGTON	NEWINGTON, TOWN OF	KDA635	153.8300	PF
NEWINGTON	NEWINGTON, TOWN OF	KDA635	154.4450	PF
NEWTON	BENNETT, A J	WZZ296	47.5800	PS

Delaware

City	Licensee	Callsign	Freq	Sr.
	NEW CASTLE, COUNTY OF	KA68766	463.1500	PS
	NEW CASTLE, COUNTY OF	KA68766	463.1750	PS
	NEW CASTLE, COUNTY OF	WRX649	47.6200	PS
ODESSA	NEW CASTLE, COUNTY OF	WRY277	462.9750	PS

Florida

City	Licensee	Callsign	Freq	Sr.
	JACKSONVILLE BEACH, CITY OF	WPHV938	460.0375	PL
	JACKSONVILLE, CITY OF	KNIC429	153.4550	IW
	JACKSONVILLE, CITY OF	KNIC430	153.6350	IW
	MARTIN, COUNTY OF	KIB437	154.9500	PP
	MARTIN, COUNTY OF	KIB437	155.3700	PP
	MARTIN, COUNTY OF	KIB437	465.4000	PP
	SAINT LUCIE, COUNTY OF	KVJ642	155.9850	PL
CASSELBERR	CASSELBERRY, CITY OF	KTO445	155.3700	PP
COCONUT CR	COCONUT CREEK, CITY OF	KNFW239	851.6875	GP
COCONUT CR	COCONUT CREEK, CITY OF	KNFW239	852.6875	GP
COCONUT CR	COCONUT CREEK, CITY OF	KNFW239	857.2125	GP
FERNANDINA	FERNANDINA BEACH, CITY OF	KIJ400	154.7250	PP
GULF BREEZ	MIDWAY VOLUNTEER FIRE DEPARTME	WNCE444	154.0100	PF
INDIAN RIV	INDIAN RIVER SHORES, TOWN OF	WNDB619	156.1950	PF
LIVE OAK	LIVE OAK, CITY OF	KRO479	155.7450	PL
MARGATE	COCONUT CREEK, CITY OF	KNFW239	857.2125	GP
PONCE INLE	PONCE INLET, CITY OF	KNFE733	155.1150	PL
TALLAHASSE	FLORIDA, STATE OF	WNMK959	453.7750	PP
TALLAHASSE	FLORIDA, STATE OF	WNMK959	458.7750	PP
WESTVILLE	NEW HOPE VOL FIRE DEPT	WNDE651	154.1750	PF

Georgia

City	Licensee	Callsign	Freq	Sr.
	ALMA, CITY OF	WYR717	153.9350	PL
	ATHENS GENERAL HOSPITAL EMS	WNDB507	155.2950	PS
	CARROLL, COUNTY OF	WNDJ352	154.0250	PL
	CHATHAM, COUNTY OF	WNDM625	153.9650	PL
	CHATHAM, COUNTY OF	WNDM625	156.0000	PL
	CHATHAM, COUNTY OF	WNDM625	458.2750	PL
	DOUGHERTY, COUNTY OF	WPHU417	155.6100	PL
	DOUGHERTY, COUNTY OF	WPHU417	159.7650	PL
	OCONEE, COUNTY OF	KTE534	150.8900	PP
	OCONEE, COUNTY OF	KTE534	154.9050	PP
	OCONEE, COUNTY OF	KTE534	154.9350	PP
	THOMASVILLE, CITY OF	KDP273	159.7050	PL
ALBANY	DOUGHERTY, COUNTY OF	WPHU417	159.7650	PL
ATLANTA	MOREHOUSE COLLEGE	WPHR610	451.7000	PP
ATLANTA	MOREHOUSE COLLEGE	WPHR610	453.1500	PP
ATLANTA	MOREHOUSE COLLEGE	WPHR610	456.7000	PP
CANTON	HOLLY SPRINGS, CITY OF	WPHX992	151.2500	PP
CHESTER	CHESTER, CITY OF	WPHQ584	173.2037	PL
CLEVELAND	WHITE, COUNTY OF	WPHW991	155.4150	PP
DALTON	HAMILTON MEDICAL CENTER	WXP355	155.1600	PS
DALTON	HAMILTON MEDICAL CENTER	WXP355	155.3400	PS
DONALSONVI	DONALSONVILLE, CITY OF	WPHS360	154.7250	PP
DONALSONVI	DONALSONVILLE, CITY OF	WPHS360	154.9050	PP
DONALSONVI	DONALSONVILLE, CITY OF	WPHS360	154.9350	PP
DONALSONVI	DONALSONVILLE, CITY OF	WPHS360	155.5650	PP
DUBLIN	DUBLIN, CITY OF	KYO288	154.2800	PF
DUBLIN	DUBLIN, CITY OF	KYO288	154.3100	PF
HARTWELL	HARTWELL, CITY OF	KV2149	154.9050	PP
HARTWELL	HARTWELL, CITY OF	KV2149	155.4750	PP
HARTWELL	HARTWELL, CITY OF	KV2149	155.5200	PP
HARTWELL	HARTWELL, CITY OF	KV2149	159.6300	PP
LA GRANGE	TROUP, COUNTY OF	WPHW588	154.9050	PP
LA GRANGE	TROUP, COUNTY OF	WPHW588	155.4900	PP
MILLEDGEVI	BALDWIN, COUNTY OF	KNGS374	154.9050	PP
MILLEDGEVI	BALDWIN, COUNTY OF	KNGS374	154.9350	PP
MILLEDGEVI	BALDWIN, COUNTY OF	KNGS374	155.2500	PP
SUMMERVILL	CHATTOOGA COUNTY HOSPITAL	KVS249	155.2650	PS
SUMMERVILL	CHATTOOGA COUNTY HOSPITAL	KVS249	155.3400	PS
THOMASVILL	THOMASVILLE, CITY OF	KDP273	159.7050	PL
WALESKA	CHEROKEE, COUNTY OF	WPHV678	155.5650	PP
WALESKA	CHEROKEE, COUNTY OF	WPHV678	159.6300	PP
WARNER ROB	WARNER ROBINS, CITY OF	KII987	158.1900	IW

City	Licensee	Callsign	Freq	Sr.
WATKINSVIL	OCONEE, COUNTY OF	KTE534	159.6750	PP
WATKINSVIL	OCONEE, COUNTY OF	WNDK511	153.4100	PL
WATKINSVIL	OCONEE, COUNTY OF	WNDK511	153.9800	PL
WATKINSVIL	OCONEE, COUNTY OF	WNDK511	158.1600	PL

Hawaii

City	Licensee	Callsign	Freq	Sr.
HALIIMAILE	MAUI, COUNTY OF	WNTZ609	955.9000	IW
MAKAWAO	MAUI, COUNTY OF	WNTZ610	959.5000	IW

Iowa

City	Licensee	Callsign	Freq	Sr.
	SHELBY COUNTY EMA	WRA262	153.8900	PF
	SHELBY COUNTY EMA	WRA262	154.2200	PF
	SHELBY COUNTY EMA	WRA262	154.2800	PF
	WESTWOOD COMMUNITY SCHOOL	WQO442	45.9600	PS
	WINNESHIEK, COUNTY OF	WNSU442	153.7850	PL
BOONE	BOONE, COUNTY OF	WNST307	453.3250	PL
DEFIANCE	SHELBY COUNTY EMA	WRA262	154.2200	PF
ELKHORN	SHELBY COUNTY EMA	WRA262	154.2200	PF
GLENWOOD	GLENWOOD COMMUNITY SCHOOLS	KEG504	155.2950	PS
HARLAN	SHELBY COUNTY EMA	WRA262	153.8900	PF
HARLAN	SHELBY COUNTY EMA	WRA262	154.2200	PF
HARLAN	SHELBY COUNTY EMA	WRA262	154.2800	PF
HAWKEYE	HAWKEYE, CITY OF	WNSX410	155.0550	PL
LE CLAIRE	LE CLAIRE AMBULANCE SERVICE IN	WPHT715	155.1600	PM
LE CLAIRE	LE CLAIRE AMBULANCE SERVICE IN	WPHT715	155.3400	PM
MASON CITY	IOWA, STATE OF	KEP568	156.0600	PH
MASON CITY	IOWA, STATE OF	KEP568	156.1050	PH
MASON CITY	IOWA, STATE OF	KEP568	159.1800	PH
MASON CITY	IOWA, STATE OF	KEP568	159.1950	PH
OTTUMWA	OTTUMWA, CITY OF	KAB234	155.0100	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	155.4750	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	460.1750	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	460.2250	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	460.2500	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	460.3750	PP
OTTUMWA	OTTUMWA, CITY OF	KAB234	465.3750	PP
SUTHERLAND	SUTHERLAND, CITY OF	KA73262	153.9950	PL
TENNANT	SHELBY COUNTY EMA	WRA262	154.2200	PF
WINTERSET	MADISON, COUNTY OF	WPHS471	453.8250	PL
WINTERSET	MADISON, COUNTY OF	WPHS471	458.8250	PL

Idaho

City	Licensee	Callsign	Freq	Sr.
	SUNNYSIDE RURAL FIRE DISTRICT	WPHT662	154.2350	PF
	WHITNEY FIRE PROTECTION DISTRI	WPHW603	150.9950	PF
	WHITNEY FIRE PROTECTION DISTRI	WPHW603	159.0600	PF
ARCO	ARCO, CITY OF	WNCY240	453.8500	PL
ASHTON	IDAHO, STATE OF	WNSU344	154.7850	PP
ATOMIC CIT	IDAHO, STATE OF	WNSU344	154.7850	PP
BOISE	IDAHO, STATE OF	WNSV368	155.9550	PL
BOISE	WHITNEY FIRE PROTECTION DISTRI	WPHW603	150.9950	PF
GENESEE	GENESEE JOINT SCHOOL DIST 282	WNDE742	155.1750	PS
MARSING	MARSING RURAL FIRE DISTRICT	KKV566	153.7700	PF
MARSING	MARSING RURAL FIRE DISTRICT	KKV566	154.2800	PF
MARSING	MARSING RURAL FIRE DISTRICT	KKV566	154.3400	PF
NAMPA	NAMPA, CITY OF	WPHN973	460.5750	PP
NAMPA	NAMPA, CITY OF	WPHN973	465.5750	PP
OROFINO	IDAHO, STATE OF	WPHS326	156.0000	PL
PRIEST RIV	WEST PEND OREILLE FIRE PROTECT	KNGW204	154.1900	PF
PRIEST RIV	WEST PEND OREILLE FIRE PROTECT	KNGW204	154.4000	PF
REXBURG	REXBURG, CITY OF	WNZC229	155.1150	PL
REXBURG	REXBURG, CITY OF	WNZC229	158.9700	PL
SAINT ANTH	IDAHO, STATE OF	WNSU344	156.1500	PP
SODA SPRIN	MONSANTO CORPORATION	WPHT716	154.2050	PF

Illinois

City	Licensee	Callsign	Freq	Sr.
	BEAVERVILLE FIRE PROTECTION DI	WNDD475	154.4000	PF
	BENSON COMMUNITY FIRE PROT DIS	KD2464	155.0550	PL
	BRADFORD, TOWNSHIP OF	WQQ362	155.0850	PL
	CHICAGO, CITY OF	KA5489	154.6500	PP
	CHICAGO, CITY OF	KA5489	154.7400	PP
	CHICAGO, CITY OF	KA5489	154.8000	PP
	CHICAGO, CITY OF	KA5489	159.1500	PP
	COLLINSVILLE FIRE DEPARTMENT	KW7279	155.1600	PS
	COLLINSVILLE FIRE DEPARTMENT	KW7279	155.2200	PS
	EFFINGHAM, CITY OF	WPHS390	451.0375	IW
	FREITAG AMBULANCE SERVICE	WPHU791	155.3400	PM
	LEBANON, CITY OF	WPHW804	155.1600	PM
	LEBANON, CITY OF	WPHW804	155.3400	PM
	LIVINGSTON, COUNTY OF	WPHX984	458.2000	PL
	LIVINGSTON, COUNTY OF	WPHX984	458.2500	PL
	LIVINGSTON, COUNTY OF	WPHX984	458.3000	PL
	LIVINGSTON, COUNTY OF	WPHX984	458.6250	PL
	LIVINGSTON, COUNTY OF	WPHX984	458.7750	PL
	MC LEANSBORO, CITY OF	WNSU813	155.0550	PL
	MONTGOMERY, COUNTY OF	WPHN961	155.0850	PL
	URBANA, CITY OF	WPHS458	458.3000	PL
	URBANA, CITY OF	WPHS458	458.5000	PL
BERKELEY	BERKELEY, VILLAGE OF	KNHV863	155.8050	PL
CHERRY	CHERRY FIRE PROTECTION DISTRIC	KNCG436	154.1900	PF
CHERRY	CHERRY FIRE PROTECTION DISTRIC	KNCG436	154.2650	PF
CHRISMAN	CHRISMAN FIRE PROTECTION DISTR	KAU576	33.7000	PF
CRYSTAL LA	NUNDA RURAL FIRE PROTECTION DI	WNSV912	154.2500	PF
CRYSTAL LA	NUNDA RURAL FIRE PROTECTION DI	WNSV912	154.2650	PF
CRYSTAL LA	NUNDA RURAL FIRE PROTECTION DI	WNSV912	460.5750	PF
DECATUR	DECATUR, CITY OF	WPHV937	154.8000	PP
DECATUR	MACON, COUNTY OF	KWX965	151.1300	PH
DECATUR	MACON, COUNTY OF	KWX965	156.1200	PH
GENEVA	GENEVA, CITY OF	KDV361	154.0250	PL
HILLSBORO	MONTGOMERY, COUNTY OF	WPHN961	155.0850	PL
HUNTLEY	HUNTLEY, CITY OF	WNLV644	158.8500	PP
INVERNESS	PALATINE RURAL FIRE PROTECTION	WPHV238	153.8900	PF
INVERNESS	PALATINE RURAL FIRE PROTECTION	WPHV238	154.8300	PF
KINGSTON	MAYFIELD, TOWNSHIP OF	WNCX778	158.7450	PL
MORRISON	MORRISON FIRE DEPARTMENT	KSI417	154.1900	PF
MORRISON	MORRISON FIRE DEPARTMENT	KSI417	154.2500	PF
OTTAWA	LA SALLE, COUNTY OF	WQL487	453.9750	PL
OTTAWA	OTTAWA, CITY OF	KSA910	153.9650	PP
PALATINE	PALATINE RURAL FIRE PROTECTION	WPHV238	153.8900	PF
PALATINE	PALATINE RURAL FIRE PROTECTION	WPHV238	154.8300	PF
PEORIA	PEORIA, CITY OF	KNDJ429	155.0550	PL
PEORIA	PEORIA, CITY OF	KNDJ429	158.8800	PL
PEORIA	PEORIA, CITY OF	KSA946	155.3700	PP
PEORIA	PEORIA, CITY OF	KSA946	158.7300	PP
PIASA	SOUTHWESTERN COMMUNITY UNIT SC	WPHW803	155.2650	PS
RIDGE FARM	RIDGE FARM FIRE PROT DIST	KFF270	33.7000	PF
RIDGE FARM	RIDGE FARM FIRE PROT DIST	KFF270	154.4450	PF
ROCK FALLS	ROCK FALLS, CITY OF	WNTZ605	956.4187	IW
ROSCOE	ROSCOE, VILLAGE OF	WNSU339	154.9650	PL
SILVIS	SILVIS, CITY OF	KNCM826	453.6750	PL
SILVIS	SILVIS, CITY OF	KNCM826	458.6750	PL
SPRINGFIEL	ILLINOIS, STATE OF	WPGM279	453.1500	PL
SPRINGFIEL	ILLINOIS, STATE OF	WPGM279	458.1500	PL
VERNON HIL	COUNTRYSIDE FIRE PROTECTION DI	WPHT663	154.3550	PF
WEST FRANK	UNITED MINE WORKERS OF AMERICA	WPHV251	155.3400	PM
WHEELING	WHEELING, VILLAGE OF	WNDU769	857.4875	GP
WINNETKA	WINNETKA, VILLAGE OF	KBQ217	151.0100	PF
WINNETKA	WINNETKA, VILLAGE OF	KBQ217	154.1600	PF
WINNETKA	WINNETKA, VILLAGE OF	KBQ217	154.2650	PF
WINNETKA	WINNETKA, VILLAGE OF	KBQ217	154.4300	PF

Indiana

City	Licensee	Callsign	Freq	Sr.
	CHARLESTOWN, CITY OF	KJF713	154.0550	PL
	DELAWARE, COUNTY OF	KCI751	155.0850	PL
	FAYETTE COUNTY SCHOOL CORPORAT	WQH341	155.2350	PS
	HOWARD, COUNTY OF	KSQ321	154.9650	PL
	HUNTINGTON COUNTY COMMUNITY SC	KKN949	155.1750	PS
	RIPLEY, COUNTY OF	KSC597	154.8900	PP
	RIPLEY, COUNTY OF	KSC597	155.4150	PP
	RIPLEY, COUNTY OF	KSC597	155.4750	PP
	WABASH, COUNTY OF	WQI971	155.0250	PL
BRAZIL	CLAY, COUNTY OF	WPHV686	154.4000	PF
CONNERSVIL	FAYETTE, COUNTY OF	WNQA814	154.0250	PL
CONNERSVIL	FAYETTE, COUNTY OF	WNQA814	155.0250	PL
CONNERSVIL	FAYETTE, COUNTY OF	WNQA814	159.1500	PL
EAST ENTER	SWITZERLAND, COUNTY OF	WNBA466	154.0250	PL
GOSHEN	GOSHEN, CITY OF	WPHQ568	453.8000	PL
GOSHEN	GOSHEN, CITY OF	WPHQ568	458.8000	PL
INGALLS	FALL CREEK REGIONAL WASTE DIST	WNDD445	155.1450	PL
KOKOMO	KOKOMO, CITY OF	WPHM252	866.2000	GF
KOKOMO	KOKOMO, CITY OF	WPHM252	867.3250	GF
KOKOMO	KOKOMO, CITY OF	WPHM252	868.2875	GF
LAFAYETTE	LAFAYETTE, CITY OF	WPHU812	453.6000	PL
LAFAYETTE	LAFAYETTE, CITY OF	WPHU812	458.6000	PL
LEESBURG	PLAIN, TOWNSHIP OF	WNWD267	151.2050	PM
LEESBURG	PLAIN, TOWNSHIP OF	WNWD267	155.3400	PM
LINDEN	MADISON, TOWNSHIP OF	WNAE325	154.1750	PF
LINDEN	MADISON, TOWNSHIP OF	WNAE325	154.3100	PF
MARKLEVILL	ADAMS, TOWNSHIP OF	KXH638	154.3100	PF
MITCHELL	MITCHELL, CITY OF	KSI994	155.1300	PP
NEW CASTLE	NEW CASTLE, CITY OF	KBW622	154.9650	PL
ORESTES	ORESTES, TOWN OF	WPHS327	159.1500	PP
PENDLETON	PENDLETON, TOWN OF	KNCB790	154.3100	PF
RICHMOND	REID HOSPITAL & HEALTHCARE SER	WQN731	155.1600	PS
ROACHDALE	ROACHDALE, TOWN OF	WNDE911	158.7450	PL
VERNON	JENNINGS, COUNTY OF	WQS854	155.1300	PP
VERNON	JENNINGS, COUNTY OF	WQS854	156.1650	PP
VERNON	JENNINGS, COUNTY OF	WQS854	159.0150	PP
VERNON	JENNINGS, COUNTY OF	WQS854	453.5125	PP
VERNON	JENNINGS, COUNTY OF	WQS854	453.5875	PP
VERNON	JENNINGS, COUNTY OF	WQS854	453.8375	PP
VERNON	JENNINGS, COUNTY OF	WQS854	458.5125	PP
VERNON	JENNINGS, COUNTY OF	WQS854	458.5875	PP
VERNON	JENNINGS, COUNTY OF	WQS854	458.8375	PP
VERSAILLES	RIPLEY, COUNTY OF	KSC597	155.4150	PP

Kansas

City	Licensee	Callsign	Freq	Sr.
	ATCHISON, COUNTY OF	WNLY227	153.7700	PF
	ATCHISON, COUNTY OF	WNLY227	154.1300	PF

City	Licensee	Callsign	Freq	Sr.
	BUTLER, COUNTY OF	KB72716	153.8750	PL
	COFFEYVILLE, CITY OF	WNDE918	465.3500	PP
	ELLIS, COUNTY OF	KAA452	39.5600	PP
	ELLIS, COUNTY OF	KAA452	39.5800	PP
	ELLIS, COUNTY OF	KAA452	39.7000	PP
	GARFIELD, TOWNSHIP OF	WPHS228	39.5800	PL
	GARFIELD, TOWNSHIP OF	WPHS228	39.8200	PL
	IOLA, CITY OF	WNDE925	465.5750	PF
	MONTGOMERY, COUNTY OF	WQR271	39.7000	PP
	NORTHWEST KANSAS REGIONAL MEDI	WPHS346	460.5250	PM
	NORTHWEST KANSAS REGIONAL MEDI	WPHS346	465.5250	PM
BURRTON	VALLEY, TOWNSHIP OF	WNST435	158.8050	PL
CLEARWATER	CLEARWATER, CITY OF	WNCY241	46.5600	PL
COFFEYVILL	COFFEYVILLE, CITY OF	WNDE918	460.3500	PP
GOODLAND	NORTHWEST KANSAS REGIONAL MEDI	WPHS346	460.5250	PM
GOODLAND	NORTHWEST KANSAS REGIONAL MEDI	WPHS346	465.5250	PM
KANSAS CIT	UNIFIED SCHOOL DISTRICT NO 500	KAW915	155.2950	PS
LA CYNGE	LACYGNE, CITY OF	WPHU790	154.8000	PP
MORAN	MORAN, CITY OF	WNNQ967	453.4250	PL
OLATHE	OLATHE, CITY OF	KAN344	153.8450	PL
OLATHE	OLATHE, CITY OF	KAN344	158.8200	PL
OLATHE	OLATHE, CITY OF	KAN344	158.8650	PL
OSBURN	KANSAS, STATE OF	WNSR266	463.1750	PS

Kentucky

City	Licensee	Callsign	Freq	Sr.
	EDMONSON, COUNTY OF	WNST437	453.6375	PL
	MURRAY CALLOWAY CO HOSPITAL	WYR834	155.1600	PS
	WASHINGTON, COUNTY OF	WQF611	155.1300	PP
BEAVERLICK	BOONE, COUNTY OF	WEF369	942.1750	PP
BELLVIEW	BOONE COUNTY OF	WNTZ557	943.3750	PL
BERRY	BERRY, TOWN OF	WNCU590	154.1300	PF
DAWSON SPR	SOUTH HOPKINS WATER DISTRICT	WPHS457	173.3962	PL
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	855.2375	YP
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	856.9875	YP
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	857.9875	YP
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	858.9875	YP
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	859.9875	YP
EKRON	KENTUCKY, COMMONWEALTH OF	WPHS995	860.9875	YP
FAIRDALE	FAIRDALE FIRE DISTRICT	KIP603	154.2200	PF
FAIRDALE	FAIRDALE FIRE DISTRICT	KIP603	154.3700	PF
FLORENCE	BOONE, COUNTY OF	WGX971	933.1750	PL
FLORENCE	BOONE, COUNTY OF	WGX971	933.7750	PL
FLORENCE	BOONE, COUNTY OF	WGX971	934.3750	PL
FRANCISVIL	BOONE, COUNTY OF	WEF370	942.7750	PP
GEORGETOWN	GEORGETOWN, CITY OF	KNFP305	154.1600	PF
HARLAN	KENTUCKY, COMMONWEALTH OF	KJG229	453.9000	PP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	854.9625	YP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	856.9875	YP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	857.9875	YP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	858.9875	YP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	859.9875	YP
HENDERSON	KENTUCKY, COMMONWALTH OF	WPHT351	860.9875	YP
LEXINGTON	LEXINGTON FAYETTE URBAN COUNTY	KNIP996	156.1200	PH
LEXINGTON	LEXINGTON FAYETTE URBAN COUNTY	KNIP996	159.1650	PH
LOUISVILLE	KENTUCKY, COMMONWEALTH OF	KSQ783	453.9000	PP
LOUISVILLE	KENTUCKY, COMMONWEALTH OF	KSQ783	453.9500	PP
MADISONVIL	MADISONVILLE, CITY OF	KIB669	155.6100	PP
MADISONVIL	MADISONVILLE, CITY OF	KIB669	155.6250	PP
MIDDLESBOR	MIDDLESBORO BELL COUNTY RESCUE	KAT783	33.1000	PS
OLIVE HILL	OLIVE HILL, CITY OF	WNSU460	155.9850	PL
PRESTONBUR	MIDDLECREEK VOLUNTEER FIRE DEP	WNCV665	154.1450	PF
SHEPHERDSV	BULLITT, COUNTY OF	WPHT664	154.3250	PF
SHEPHERDSV	NICHOLS FIRE DISTRICT	WQA512	153.9350	PL
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	855.9875	YP
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	856.9875	YP
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	857.9875	YP
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	858.9875	YP
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	859.9875	YP
SPANN	KENTUCKY, COMMONWEALTH OF	WPHA881	860.9875	YP
STANFORD	STANFORD, CITY OF	KTV648	154.3850	PF
TEMPLE HIL	TEMPLE HILL, TOWN OF	WNAP569	154.1450	PF

Louisiana

City	Licensee	Callsign	Freq	Sr.
	CYPRESS BLACK BAYOU REC & WATE	WQK309	155.8200	PL
	LAKE CHARLES MEMORIAL HOSPITAL	WPHT717	155.4000	PM
ABBEVILLE	ABBEVILLE, CITY OF	KDR761	154.1300	PF
ABBEVILLE	ABBEVILLE, CITY OF	KDR761	154.2800	PF
AMITE	HOOD MEMORIAL HOSPITAL	WNBZ364	155.1750	PS
LAFAYETTE	LAFAYETTE GENERAL MEDICAL CENT	KWE364	155.1750	PS
LAFAYETTE	LAFAYETTE GENERAL MEDICAL CENT	KWE364	155.3400	PS
MONTGOMERY	GRANT, PARISH OF	KFT884	460.4500	PP
NEW ORLEAN	CARE AMBULANCE SERVICE INC	WQI468	155.2200	PS
NEW ORLEAN	CARE AMBULANCE SERVICE INC	WQI468	155.3400	PS
PLAQUEMINE	IBERVILLE, PARISH OF	WPDX286	460.1750	PL
PLAQUEMINE	IBERVILLE, PARISH OF	WPDX286	465.1750	PL
POLLOCK	GRANT, PARISH OF	KFT884	154.8600	PP
POLLOCK	GRANT, PARISH OF	KFT884	155.4750	PP
POLLOCK	GRANT, PARISH OF	KFT884	155.7000	PP
POLLOCK	GRANT, PARISH OF	KFT884	158.8800	PP
SAINT GABR	LOUISIANA STATE UNIVERSITY	WNSU755	155.8200	PL
SIMMS	GRANT, PARISH OF	KFT884	465.4500	PP
WASHINGTON	HOUSING AUTHORITY OF ST LANDRY	KBF466	155.0250	PL
WINNFIELD	WINNFIELD, CITY OF	KDE214	154.1300	PF
WINNFIELD	WINNFIELD, CITY OF	KDE214	154.2800	PF
WINNFIELD	WINNFIELD, CITY OF	KDE214	159.0450	PF

Massachusetts

City	Licensee	Callsign	Freq	Sr.
	BELCHERTOWN, TOWN OF	WBC449	460.4750	PP
	BELCHERTOWN, TOWN OF	WBC449	465.4750	PP
	PLYMOUTH, COUNTY OF	KCH429	33.9000	PF
ASHLAND	ASHLAND, TOWN OF	WNSS721	158.2650	IW
BRAINTREE	BRAINTREE, TOWN OF	WZQ742	47.7600	IW
BUCKLAND	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.8600	PF
CHICOPEE	CHICOPEE, CITY OF	WNTZ926	956.3437	IW
COLRAIN	COLRAIN, TOWN OF	KCE879	33.5400	PF
FAIRHAVEN	FAIRHAVEN, TOWN OF	WPHY624	159.5850	PP
FRANKLIN	FRANKLIN, TOWN OF	KCY582	33.5000	PF
FRANKLIN	FRANKLIN, TOWN OF	KCY582	33.5400	PF
GROTON	BUCKINGHAM BUS CO INC	KYQ560	155.2050	PS
LOWELL	LOWELL, CITY OF	KNDV866	154.0100	PF
LOWELL	LOWELL, CITY OF	KNDV866	154.2050	PF
LOWELL	LOWELL, CITY OF	KNDV866	159.4500	PF
LYNNFIELD	LYNNFIELD, TOWN OF	WNDK988	154.9800	PL
METHUEN	METHUEN, TOWN OF	KCI237	154.0700	PF
MIDDLEBORO	MIDDLEBOROUGH, TOWN OF	WPHU785	154.0100	PF
NATICK	NATICK, TOWN OF	WIF495	472.7375	PP
NEWBURYPOR	NEWBURYPORT, CITY OF	WYK637	151.1000	PH
SCITUATE	SCITUATE, TOWN OF	WIK625	482.5875	PP
SCITUATE	SCITUATE, TOWN OF	WIK625	485.5875	PP
SHELBURNE	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.4800	PF
SHELBURNE	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.5400	PF
SHELBURNE	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.8600	PF
SOUTH HADL	SOUTH HADLEY, TOWN OF	WQN913	159.5100	PH
SUNDERLAND	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.4800	PF
SUNDERLAND	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.5400	PF
SUNDERLAND	SHELBURNE FALLS FIRE DISTRICT	KCE786	33.8600	PF
WALES	WALES, TOWN OF	KCQ767	45.4600	PP

Maryland

City	Licensee	Callsign	Freq	Sr.
	FREDERICK, COUNTY OF	WPHX968	453.6875	PL
	FREDERICK, COUNTY OF	WPHX968	458.6875	PL
	MARYLAND, STATE OF	WZX579	47.5000	PS
	NEW WINDSOR, TOWN OF	WNSU508	153.8300	PF
	WICOMICO, COUNTY OF	WZU603	154.3250	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	33.6000	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	33.6800	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	33.7800	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	33.9400	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	33.9800	PF
CUMBERLAND	BALTIMORE PIKE VOLUNTEER FIRE	KJB855	153.8300	PF
LEWISTOWN	LEWISTOWN VOLUNTEER FIRE COMPA	KSS202	46.3400	PF
LEWISTOWN	LEWISTOWN VOLUNTEER FIRE COMPA	KSS202	46.4200	PF
SALISBURY	SALISBURY, CITY OF	WPHQ675	856.7625	YP
SALISBURY	SALISBURY, CITY OF	WPHQ675	857.7625	YP
SALISBURY	SALISBURY, CITY OF	WPHQ675	858.7625	YP
SALISBURY	SALISBURY, CITY OF	WPHQ675	859.7625	YP
SALISBURY	SALISBURY, CITY OF	WPHQ675	860.7625	YP

Maine

City	Licensee	Callsign	Freq	Sr.
	NORTHERN MAINE MEDICAL CENTER	KSM989	155.3850	PS
	SAGADAHOC, COUNTY OF	WNNV444	154.2200	PF
	SAGADAHOC, COUNTY OF	WNPR944	154.3250	PF
	TOPSHAM, TOWN OF	KCH434	154.3100	PF
BAILEYVILL	BAILEYVILLE, TOWN OF	WPHR608	155.0250	PL
BAILEYVILL	BAILEYVILLE, TOWN OF	WPHR608	155.9550	PL
CUSHING	CUSHING, TOWN OF	KVX761	33.7000	PF
CUSHING	CUSHING, TOWN OF	KVX761	154.3100	PF
FARMINGTON	FARMINGTON, TOWN OF	WPHS315	155.2500	PP
FARMINGTON	FARMINGTON, TOWN OF	WPHS315	155.6400	PP
LEWISTON	LEWISTON, CITY OF	WPHQ600	159.0300	PP
MARS HILL	AROOSTOOK MEDICAL CENTER	KZG293	155.3850	PS
MONMOUTH	MONMOUTH ACADEMY	WPHV228	155.2050	PS
MONROE	MONROE, TOWN OF	WNSU698	154.2050	PF
ROCKLAND	KNOX, COUNTY OF	KCC826	155.0100	PP
THORNDIKE	THORNDIKE, CITY OF	WNAU878	154.3100	PF
UNION	UNION, TOWN OF	WPHV683	33.7000	PF
UNION	UNION, TOWN OF	WPHV683	33.8400	PF

Michigan

City	Licensee	Callsign	Freq	Sr.
	ADRIAN, TOWNSHIP OF	WPHR609	155.1600	PM
	ADRIAN, TOWNSHIP OF	WPHR609	155.2800	PM
	ADRIAN, TOWNSHIP OF	WPHR609	155.3400	PM
	BENZIE, COUNTY OF	KSX311	39.1400	PP
	BENZIE, COUNTY OF	KSX311	39.6400	PP
	BENZIE, COUNTY OF	KSX311	39.8200	PP
	BENZIE, COUNTY OF	WNSV907	155.1600	PS
	BENZIE, COUNTY OF	WNSV907	155.1750	PS
	BERRIEN, COUNTY OF	KZV872	155.9250	PL

City	Licensee	Callsign	Freq	Sr.
	CHIPPEWA, COUNTY OF	KQE574	458.9000	PH
	CITY OF PONTIAC SCHOOL DISTRIC	WPHU347	461.1125	IB
	CITY OF PONTIAC SCHOOL DISTRIC	WPHU347	466.1125	IB
	HOWELL, CITY OF	KXI983	154.0100	PF
	HOWELL, CITY OF	KXI983	154.2950	PF
	HOWELL, CITY OF	KXI983	154.4000	PF
	KALKASKA, COUNTY OF	WNDD900	151.1000	PH
	MECOSTA, COUNTY OF	KIP419	151.1000	PH
	MECOSTA, COUNTY OF	KIP419	156.2400	PH
	SANDUSKY, CITY OF	WNDJ332	39.1000	PL
	VAN BUREN, COUNTY OF	WNSU238	154.2050	PF
	WEXFORD, COUNTY OF	WNSV511	158.9100	PP
BERRIEN SP	BERRIEN SPRINGS, VILLAGE OF	WPHV677	453.4250	PL
BERRIEN SP	BERRIEN SPRINGS, VILLAGE OF	WPHV677	458.4250	PL
BIG RAPIDS	MECOSTA, COUNTY OF	KIP419	156.2400	PH
BURTON	LIFE LINE GRAND BLANC AMBULANC	WPGV737	151.3550	PM
DETROIT	WAYNE STATE UNIVERSITY	KTE630	453.6250	PL
DETROIT	WAYNE STATE UNIVERSITY	KTE630	458.6250	PL
FRASER	FRASER, CITY OF	WPHR993	46.5400	PL
GROSSE ILE	GROSSE ILE, TOWNSHIP OF	KQG740	155.3700	PP
GROSSE ILE	GROSSE ILE, TOWNSHIP OF	KQG740	155.6400	PP
HOWELL	HOWELL, CITY OF	KXI983	154.0100	PF
HOWELL	HOWELL, CITY OF	KXI983	154.4000	PF
ISHPEMING	MICHIGAN, STATE OF	KQD512	44.6400	PO
ISHPEMING	MICHIGAN, STATE OF	KQD512	44.7200	PO
ISHPEMING	MICHIGAN, STATE OF	KQD512	44.8000	PO
ISHPEMING	MICHIGAN, STATE OF	KQD512	44.8400	PO
LAKEVIEW	LAKEVIEW, VILLAGE OF	WNSV514	158.9550	PL
MAPLE RAPI	MAPLE RAPIDS, VILLAGE OF	WPHR611	154.2200	PF
MONTGOMERY	MONTGOMERY, VILLAGE OF	WPCZ292	33.7800	PF
MONTGOMERY	MONTGOMERY, VILLAGE OF	WPCZ292	154.3400	PF
MONTGOMERY	MONTGOMERY, VILLAGE OF	WPCZ292	154.4450	PF
NEW BALTIM	NEW BALTIMORE, CITY OF	KRJ706	37.2600	PL
OTSEGO	OTSEGO, CITY OF	KOK278	155.0400	PL
RICHMOND	RICHMOND, CITY OF	WAE697	465.1500	PP
RICHMOND	RICHMOND, CITY OF	WAE697	465.2500	PP
ROSCOMMON	GERRISH HIGGINS SCHOOL DISTRIC	KDW582	155.2050	PS
SAINT JOSE	SAINT JOSEPH PUBLIC SCHOOLS	KZA359	47.6200	PS
SAULT SAIN	CHIPPEWA, COUNTY OF	KQE574	458.9000	PH
TURNER	ARENAC, COUNTY OF	KQR611	158.8500	PP
WATERVLIET	WATERVLIET, CITY OF	WNSU506	153.9950	PL
YPSILANTI	YPSILANTI, TOWNSHIP OF	KQA976	151.4300	PF
YPSILANTI	YPSILANTI, TOWNSHIP OF	KQA976	154.3700	PF
ZEELAND	ZEELAND, CITY OF	WNDG324	158.8200	PL

Minnesota

City	Licensee	Callsign	Freq	Sr.
	COKATO, CITY OF	KB71262	155.3400	PS
	COKATO, CITY OF	KB71262	155.4000	PS
	HENNEPIN, COUNTY OF	KAZ445	155.8050	PL
	HENNEPIN, COUNTY OF	KAZ445	155.8200	PL
	HENNEPIN, COUNTY OF	WPCD397	453.1875	PL
	HENNEPIN, COUNTY OF	WPCD397	453.3875	PL
	HENNEPIN, COUNTY OF	WPCD397	453.4375	PL
	HENNEPIN, COUNTY OF	WPCD397	453.5875	PL
	HENNEPIN, COUNTY OF	WPCD397	458.1875	PL
	HENNEPIN, COUNTY OF	WPCD397	458.3875	PL
	HENNEPIN, COUNTY OF	WPCD397	458.4375	PL
	HENNEPIN, COUNTY OF	WPCD397	458.5875	PL
	INDEPENDENT SCHOOL DISTRICT NO	KZB202	155.2050	PS
	ITASCA, COUNTY OF	WNQA350	155.4750	PP
	ITASCA, COUNTY OF	WNQA350	156.1500	PP
	ITASCA, COUNTY OF	WNQA350	158.7600	PP
	MINNESOTA, STATE OF	WPHS244	453.5625	PH
	MINNESOTA, STATE OF	WPHS244	458.5625	PH
	NISSWA, CITY OF	WNBN272	153.7700	PF
	NISSWA, CITY OF	WNBN272	154.1900	PF
	NISSWA, CITY OF	WNBN272	154.2950	PF
	PILLAGER AREA FIRE PROTECTION	WRW784	154.1600	PF
	PILLAGER AREA FIRE PROTECTION	WRW784	154.1900	PF
	PILLAGER AREA FIRE PROTECTION	WRW784	154.2200	PF
	PILLAGER AREA FIRE PROTECTION	WRW784	154.2950	PF
BAUDETTE	LAKEWOOD HEALTH CENTER	KKL621	155.3250	PS
BAUDETTE	LAKEWOOD HEALTH CENTER	KKL621	155.3400	PS
BAUDETTE	LAKEWOOD HEALTH CENTER	KKL621	163.2500	PS
BRANDON	MILLERVILLE, CITY OF	WQL894	154.1750	PF
BROOKLYN P	BROOKLYN PARK, CITY OF	KNBE405	173.2375	IW
BUFFALO	BUFFALO, CITY OF	KQG314	155.0250	PL
CARVER	CARVER, COUNTY OF	KWM572	154.1450	PF
CARVER	CARVER, COUNTY OF	KWM572	154.2950	PF
COLOGNE	CARVER, COUNTY OF	KWM572	154.2950	PF
COMFREY	COMFREY, CITY OF	WYC598	155.7750	PL
DULUTH	MINNESOTA, STATE OF	WPCH275	453.9000	PH
DULUTH	MINNESOTA, STATE OF	WPHR934	155.8650	PL
DULUTH	MINNESOTA, STATE OF	WPHR934	158.9400	PL
EVELETH	EVELETH, CITY OF	WPHN925	155.5200	PP
EVELETH	EVELETH, CITY OF	WPHN925	158.9550	PP
FAIRFAX	FAIRFAX VETERINARY CLINIC LTD	WNDA561	47.6600	PS
GOLDEN VAL	HENNEPIN, COUNTY OF	KAZ445	154.1000	PL
GOLDEN VAL	HENNEPIN, COUNTY OF	KAZ445	155.8050	PL
GOLDEN VAL	HENNEPIN, COUNTY OF	KAZ445	155.8200	PL
GRAND RAPI	ITASCA, COUNTY OF	WNQA350	158.7600	PP
HUTCHINSON	HUTCHINSON, CITY OF	KVR757	153.8600	PP
HUTCHINSON	HUTCHINSON, CITY OF	KVR757	155.3700	PP
HUTCHINSON	HUTCHINSON, CITY OF	KVR757	155.4750	PP
HUTCHINSON	HUTCHINSON, CITY OF	KVR757	155.7600	PP
HUTCHINSON	HUTCHINSON, CITY OF	KVR757	155.9250	PP
INVER GROV	INVER GROVE HEIGHTS, CITY OF	KWL385	154.8900	PP
KIMBALL	MINNESOTA, STATE OF	KNAL547	151.3250	PO
LAKE GEORG	LAKE GEORGE, CITY OF	WNSW611	154.3700	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	153.7700	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	153.8300	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	153.9500	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	154.2650	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	154.2950	PF
LITCHFIELD	LITCHFIELD, CITY OF	WZX523	154.4450	PF
LITTLE FAL	LITTLE FALLS, CITY OF	WNSU340	154.8000	PP
MAHTOWA	MINNESOTA, STATE OF	WYV329	151.3850	PO
MAPLE GROV	HENNEPIN, COUNTY OF	KAZ445	154.1000	PL
MAYER	CARVER, COUNTY OF	KWM572	154.1450	PF
MILACA	MINNESOTA, STATE OF	KNAL547	151.3250	PO
MINNEAPOLI	HENNEPIN, COUNTY OF	WNGN290	453.8500	PL
MINNETONKA	HENNEPIN, COUNTY OF	WNGN290	453.8500	PL
MINNETONKA	MINNETONKA, CITY OF	KNGD873	858.2125	GP
MONTGOMERY	MONTGOMERY, CITY OF	WQL929	154.4000	PF
ONAMIA	MINNESOTA, STATE OF	KAH522	151.3250	PO
ONAMIA	MINNESOTA, STATE OF	KAH522	151.4150	PO
ONAMIA	MINNESOTA, STATE OF	KAH522	159.3150	PO
PERHAM	LAKE COUNTRY TRANSPORTATION IN	WNSQ949	155.2650	PS
PILLAGER	PILLAGER AREA FIRE PROTECTION	WRW784	154.1600	PF
PILLAGER	PILLAGER AREA FIRE PROTECTION	WRW784	154.1900	PF
PILLAGER	PILLAGER AREA FIRE PROTECTION	WRW784	154.2200	PF
PILLAGER	PILLAGER AREA FIRE PROTECTION	WRW784	154.2950	PF
PLYMOUTH	HENNEPIN, COUNTY OF	KAZ445	154.1000	PL
PLYMOUTH	HENNEPIN, COUNTY OF	KAZ445	154.9950	PL
PLYMOUTH	HENNEPIN, COUNTY OF	KAZ445	155.8050	PL
PLYMOUTH	HENNEPIN, COUNTY OF	KAZ445	155.8200	PL
PLYMOUTH	HENNEPIN, COUNTY OF	KAZ445	155.8500	PL
PRESTON	FILLMORE, COUNTY OF	WZC677	154.2950	PF
SAINT CLOU	MINNESOTA, STATE OF	KAH522	151.3250	PO
SAINT CLOU	MINNESOTA, STATE OF	KAH522	151.4150	PO
SAINT CLOU	MINNESOTA, STATE OF	KAH522	159.3150	PO
SPRING PAR	HENNEPIN, COUNTY OF	KAZ445	154.9950	PL
SPRING PAR	HENNEPIN, COUNTY OF	KAZ445	155.8050	PL
SPRING PAR	HENNEPIN, COUNTY OF	KAZ445	155.8500	PL
WACONIA	WACONIA VETERINARY CLINIC	WNST439	47.5800	PS
WILLMAR	WILLMAR, CITY OF	KBQ771	155.0400	PL
WOODLAND	MINNESOTA, STATE OF	WYV329	151.3850	PO
ZIMMERMAN	MINNESOTA, STATE OF	KAH522	151.3250	PO
ZIMMERMAN	MINNESOTA, STATE OF	KAH522	151.4150	PO
ZIMMERMAN	MINNESOTA, STATE OF	KAH522	159.3150	PO

Missouri

City	Licensee	Callsign	Freq	Sr.
	CARROLL COUNTY AMBULANCE DISTR	KNBP344	155.4000	PS
	CLARK, COUNTY OF	KAA726	155.4750	PP
	CLARK, COUNTY OF	KAA726	155.5200	PP
	CLARK, COUNTY OF	KAA726	155.7300	PP
	CLARK, COUNTY OF	KAA726	156.1500	PP
	HERMANN, CITY OF	KBF583	155.4750	PP
	HERMANN, CITY OF	KBF583	155.7300	PP
	NIMS, C E	KAI743	47.6200	PS
	PETTIS COUNTY R 5 SCHOOL DISTR	WNSS751	155.2650	PS
	POPLAR BLUFF CITY OF	WNTZ592	456.2500	IW
	VIENNA VETERINARY CLINIC	WQN915	47.4600	PS
ARNOLD	ROCK TOWNSHIP AMBULANCE DISTRI	WSL653	155.2950	PS
CUBA	CRAWFORD COUNTY R II SCHOOLS	WNDB615	155.2350	PS
DESLOGE	DESLOGE, CITY OF	WRG741	154.3400	PF
HOLDEN	HOLDEN, CITY OF	WPHT671	154.3700	PF
HOLLISTER	HOLLISTER, CITY OF	WNDD447	154.1000	PL
HOLLISTER	HOLLISTER, CITY OF	WQI480	154.8450	PP
IMPERIAL	ROCK TOWNSHIP AMBULANCE DISTRI	WSL653	155.2950	PS
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	155.2950	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	155.3400	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	155.4000	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	462.9500	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	462.9750	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.0000	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.0250	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.0500	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.0750	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.1000	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.1250	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.1500	PM
JEFFERSON	CAPITAL REGION MEDICAL CENTER	KXL292	463.1750	PM
KAHOKA	CLARK, COUNTY OF	KAA726	155.3700	PP
KAHOKA	CLARK, COUNTY OF	KAA726	155.4750	PP
KAHOKA	CLARK, COUNTY OF	KAA726	155.5200	PP
KAHOKA	CLARK, COUNTY OF	KAA726	155.7300	PP
KIRKSVILLE	KIRKSVILLE, CITY OF	WPHT670	154.1450	PF
LOWRY CITY	POPLAR BLUFF CITY OF	WNTZ592	451.4250	IW
LOWRY CITY	POPLAR BLUFF CITY OF	WNTZ592	456.4250	IW
NOEL	NOEL, CITY OF	WQK885	154.9800	PL
POPLAR BLU	POPLAR BLUFF CITY OF	WNTZ592	928.3687	IW
POPLAR BLU	POPLAR BLUFF CITY OF	WNTZ592	952.3687	IW
REEDS SPRI	REEDS SPRING, CITY OF	WNSS740	154.0850	PL
ROGERSVILL	LOGAN ROGERSVILLE FIRE PROTECT	KNAF258	154.2350	PF
ROGERSVILL	LOGAN ROGERSVILLE FIRE PROTECT	KNAF258	154.2800	PF
ROGERSVILL	LOGAN ROGERSVILLE FIRE PROTECT	KNAF258	154.4000	PF
ROLLA	ROLLA, CITY OF	KDU231	153.8300	PF

City	Licensee	Callsign	Freq	Sr.
ROLLA	ROLLA, CITY OF	KDU231	154.3250	PF
ROLLA	ROLLA, CITY OF	KDU231	154.4150	PF
SAINT PETE	SAINT PETERS, CITY OF	KKD426	155.3100	PP
SAINT PETE	SAINT PETERS, CITY OF	KKD426	155.4750	PP
SPRINGFIEL	EBENEZER FIRE PROTECTION DISTR	WPHU783	154.2800	PF
SPRINGFIEL	EBENEZER FIRE PROTECTION DISTR	WPHU783	154.3100	PF
SPRINGFIEL	LOGAN ROGERSVILLE FIRE PROTECT	KNAF258	154.4000	PF
WINDSOR	WINDSOR, CITY OF	WPHS460	155.1450	PL

Mississippi

City	Licensee	Callsign	Freq	Sr.
	COAHOMA, COUNTY OF	KTC969	45.2200	PP
	WAYNE, COUNTY OF	KDV806	45.1400	PP
	WAYNE, COUNTY OF	KDV806	45.2200	PP
	WAYNE, COUNTY OF	KDV806	45.2600	PP
CENTERVILL	FIELD MEMORIAL COMMUNITY HOSPI	WQH469	155.1600	PS
CENTERVILL	FIELD MEMORIAL COMMUNITY HOSPI	WQH469	155.3400	PS
DECATUR	DECATUR, TOWN OF	WNCU444	154.1300	PF
DECATUR	DECATUR, TOWN OF	WNCU444	154.1600	PF
FOXWORTH	MISSISSIPPI, STATE OF	WPHS463	42.1600	PP
HEIDELBERG	HEIDELBERG, CITY OF	WPHV227	154.8150	PP
HEIDELBERG	HEIDELBERG, CITY OF	WPHV227	158.8800	PP
HOLLANDALE	HOLLANDALE, CITY OF	KTR730	45.1200	PL
JACKSON	MISSISSIPPI, STATE OF	KKA929	42.0200	PP
JACKSON	SAINT DOMINIC JACKSON MEMORIAL	KJZ984	155.3400	PS
JACKSON	SAINT DOMINIC JACKSON MEMORIAL	KJZ984	155.3850	PS
KILN	HANCOCK COUNTY FIREFIGHTERS AS	WPHV400	154.2650	PF
NORTH CARR	NORTH CARROLLTON, CITY OF	WYF958	154.1600	PF
TUPELO	TUPELO, CITY OF	WPHS461	153.8600	PL
TUPELO	TUPELO, CITY OF	WPHS461	154.9800	PL
WEST POINT	WEST POINT, CITY OF	KXQ946	154.4300	PF

Montana

City	Licensee	Callsign	Freq	Sr.
	ST VINCENT HOSPITAL & HEALTH C	WPHT718	453.0125	PS
	ST VINCENT HOSPITAL & HEALTH C	WPHT719	458.0125	PS
BROCKTON	FORT PECK TRIBES	WPHU360	155.2800	PS
BROWNING	BLACKFEET TRIBE	WPHV675	155.1600	PS
FORTINE	TREGO FORTINE STRYKER VOLUNTEE	WPHS314	154.3100	PF
HELENA	HELENA, CITY OF	KGL869	154.0250	PL
MISSOULA	MONTANA, STATE OF	KTZ255	151.1750	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.1900	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.2500	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.2650	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.3700	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.4600	PO
MISSOULA	MONTANA, STATE OF	KTZ255	151.4750	PO
MISSOULA	MONTANA, STATE OF	KTZ255	159.3750	PO
MISSOULA	MONTANA, STATE OF	KTZ255	159.4050	PO
MISSOULA	MONTANA, STATE OF	KTZ255	171.4750	PO
MISSOULA	MONTANA, STATE OF	KTZ255	453.6500	PO
MISSOULA	MONTANA, STATE OF	KTZ255	458.6500	PO
NASHUA	FORT PECK TRIBES	WPHU361	155.2200	PS
PLAINS	MONTANA, STATE OF	WPHT650	151.1750	PO
PLAINS	MONTANA, STATE OF	WPHT650	151.1900	PO
PLAINS	MONTANA, STATE OF	WPHT650	151.4600	PO
PLAINS	MONTANA, STATE OF	WPHT650	151.4750	PO
SIDNEY	RICHLAND, COUNTY OF	WNSV876	151.1150	PH

North Carolina

City	Licensee	Callsign	Freq	Sr.
	ELM CITY EMERGENCY SERVICES IN	WNSP905	155.2200	PS
	ELM CITY EMERGENCY SERVICES IN	WNSP905	155.2800	PS
	ELM CITY EMERGENCY SERVICES IN	WNSP905	155.2950	PS
	ELM CITY EMERGENCY SERVICES IN	WNSP905	155.3400	PS
	GREENE, COUNTY OF	WNDE785	47.5400	PS
	GREENE, COUNTY OF	WNDE785	47.5800	PS
	GREENSBORO, CITY OF	WPHV679	155.0100	PP
	ORANGE, COUNTY OF	KKW364	155.2200	PS
	ORANGE, COUNTY OF	KKW364	155.2800	PS
	ORANGE, COUNTY OF	KKW364	155.3400	PS
	PAMLICO, COUNTY OF	WQK726	153.7250	IW
	SWAIN COUNTY HOSPITAL INC	KYO299	155.3400	PS
	VANCE, COUNTY OF	KCW398	46.4800	PF
	WILSON, COUNTY OF	WNDD336	155.1600	PS
APEX	WAKE, COUNTY OF	WNCZ934	457.8750	IW
APEX	WAKE, COUNTY OF	WNWI645	457.8750	IW
APEX	WAKE, COUNTY OF	WNWI646	457.8750	IW
ASHEBORO	NORTH CAROLINA, STATE OF	KVN639	155.1450	PL
ASHEBORO	NORTH CAROLINA, STATE OF	KVN639	158.9550	PL
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	153.8000	PP
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	155.4300	PP
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	156.0300	PP
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	156.0900	PP
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	156.1500	PP
ASHEVILLE	BUNCOMBE, COUNTY OF	KTR796	159.1500	PP
ATLANTIC B	ATLANTIC BEACH, TOWN OF	WNSW614	154.4150	PF
BARNARDSVI	BUNCOMBE, COUNTY OF	KTR796	155.4300	PP
BEHLAVEN	PUNGO DISTRICT HOSPITAL CORPOR	WNSY455	155.1600	PS
BISCOE	BISCOE, TOWN OF	WNSU446	453.5000	PL
BISCOE	BISCOE, TOWN OF	WNSU446	458.5000	PL
BOSTIC	NORTH CAROLINA, STATE OF	WPHM264	860.4375	GP
CARY	WAKE, COUNTY OF	WNWI645	457.8750	IW
EMERALD IS	EMERALD ISLE, TOWN OF	KUI497	155.5350	PP
FAYETTEVIL	GRAYS CREEK FIRE DEPT 2	WNBL323	154.3550	PF
FRANKLIN	NORTH CAROLINA, STATE OF	WPHM264	855.2375	GP
FUQUAY VAR	WAKE, COUNTY OF	WNCZ934	457.8750	IW
FUQUAY VAR	WAKE, COUNTY OF	WNWI645	457.8750	IW
GARNER	WAKE, COUNTY OF	WNCZ934	457.8750	IW
GREENVILLE	NORTH CAROLINA, STATE OF	WPHW668	453.7250	PL
GREENVILLE	NORTH CAROLINA, STATE OF	WPHW668	458.7250	PL
HENDERSON	HENDERSON, CITY OF	KIB878	154.8000	PP
HENDERSON	HENDERSON, CITY OF	KIB878	154.8750	PP
HENDERSON	HENDERSON, CITY OF	KIB878	155.9700	PP
HENDERSON	HENDERSON, CITY OF	KIB878	156.0300	PP
HENDERSON	HENDERSON, CITY OF	KIB878	158.9550	PP
HICKORY	NORTH CAROLINA, STATE OF	WPHM264	857.7125	GP
HOLLY SPRI	WAKE, COUNTY OF	WNCZ934	457.8750	IW
KERNERSVIL	KERNERSVILLE, TOWN OF	WPHN969	453.3250	PP
KERNERSVIL	KERNERSVILLE, TOWN OF	WPHN969	453.9500	PP
KERNERSVIL	KERNERSVILLE, TOWN OF	WPHN969	458.3250	PP
KERNERSVIL	KERNERSVILLE, TOWN OF	WPHN969	458.9500	PP
LEXINGTON	TYRO RURAL FIRE DEPT INC	WPHV236	154.1600	PF
LONG BEACH	LONG BEACH, TOWN OF	KNGL578	155.0850	PL
MARION	MCDOWELL, COUNTY OF	KIH662	154.8750	PP
MARION	MCDOWELL, COUNTY OF	KIH662	155.0100	PP
MARION	MCDOWELL, COUNTY OF	KIH662	155.1900	PP
MARION	MCDOWELL, COUNTY OF	KIH662	155.4750	PP
MARION	MCDOWELL, COUNTY OF	KIH662	155.8750	PP
MARION	MCDOWELL, COUNTY OF	KIH662	155.9700	PP
MORAVIAN F	NORTH CAROLINA, STATE OF	WPHM264	851.4125	GP
MOUNT AIRY	SURRY, COUNTY OF	WPHS232	155.5800	PL
MOUNT AIRY	SURRY, COUNTY OF	WPHS232	158.9700	PL
MOUNT STER	NORTH CAROLINA, STATE OF	WPHM264	855.4875	GP
NEWTON	NORTH CAROLINA, STATE OF	WPHM264	856.7125	GP
RALEIGH	WAKE, COUNTY OF	WNWI645	457.8750	IW
RALEIGH	WAKE, COUNTY OF	WNWI646	457.8750	IW
SPARTA	ALLEGHANY COUNTY BOARD OF EDUC	WPHQ862	47.5400	PS
WILMINGTON	NEW HANOVER INTERNATIONAL AIRP	WNKC273	453.5250	PL
WILMINGTON	NEW HANOVER INTERNATIONAL AIRP	WNKC273	453.9750	PL
WILMINGTON	NEW HANOVER INTERNATIONAL AIRP	WNKC273	458.5250	PL
WILMINGTON	NEW HANOVER INTERNATIONAL AIRP	WNKC273	458.9750	PL
WILMINGTON	OGDEN NEW HANOVER VOL RESCUE S	WNDA677	47.5000	PS
WILSON	WILSON, CITY OF	KIG410	158.1900	IW
WILSON	WILSON, CITY OF	KNIT327	451.1000	IW

North Dakota

City	Licensee	Callsign	Freq	Sr.
BEULAH	BEULAH, CITY OF	WPHV936	155.3700	PP
CAVALIER	PEMBINA, COUNTY OF	WPHQ271	457.8750	PP
EDMORE	EDMORE PUBLIC SCHOOL DIST 2	WPHR602	155.1600	PS
FESSENDEN	WELLS, COUNTY OF	WPHW591	153.8750	PP
FESSENDEN	WELLS, COUNTY OF	WPHW591	155.8650	PP
GRAND FORK	GRAND FORKS, COUNTY OF	WNDZ398	451.0500	PL
GRAND FORK	GRAND FORKS, COUNTY OF	WNDZ398	458.9000	PL

Nebraska

City	Licensee	Callsign	Freq	Sr.
	OGALLALA, CITY OF	WPHW809	451.1125	IW
	OGALLALA, CITY OF	WPHW809	456.1125	IW
BRADY	BRADY SCHOOL DISTRICT 6	KZI329	47.5000	PS
BRUNO	BUTLER, COUNTY OF	WPHW600	453.4000	PF
BRUNO	BUTLER, COUNTY OF	WPHW600	458.4000	PF
CHAMBERS	CHAMBERS PUBLIC SCHOOL	KRC690	155.1750	PS
O NEILL	HOLT, COUNTY OF	KVP484	39.8200	PP
O NEILL	HOLT, COUNTY OF	KVP484	39.9600	PP
O NEILL	HOLT, COUNTY OF	KVP484	39.9800	PP
PAPILLION	PAPILLION, CITY OF	WSY289	462.9500	PS
PAPILLION	PAPILLION, CITY OF	WSY289	462.9750	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.0000	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.0250	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.0750	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.1000	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.1250	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.1500	PS
PAPILLION	PAPILLION, CITY OF	WSY289	463.1750	PS
SUPERIOR	SUPERIOR, CITY OF	WPHR968	154.4637	IW

New Hampshire

City	Licensee	Callsign	Freq	Sr.
	CONCORD HOSPITAL	WNDA535	463.0000	PS
	CONCORD HOSPITAL	WNDA535	463.0250	PS
	CONCORD HOSPITAL	WNDA535	463.0500	PS
	CONCORD HOSPITAL	WNDA535	463.0750	PS
	CONCORD HOSPITAL	WNDA535	463.1000	PS
	CONCORD HOSPITAL	WNDA535	463.1250	PS
	CONCORD HOSPITAL	WNDA535	463.1500	PS
	CONCORD HOSPITAL	WNDA535	463.1750	PS
	DOVER, CITY OF	KCA769	153.9500	PF
	DOVER, CITY OF	KCA769	154.1900	PF
	DOVER, CITY OF	KCA769	154.2800	PF
	DOVER, CITY OF	KCA769	154.3100	PF
	DOVER, CITY OF	KCA769	154.3850	PF
	NEW HAMPSHIRE, STATE OF	WNSV474	151.7750	IB

City	Licensee	Callsign	Freq	Sr.
	OSSIPEE VALLEY MUTUAL AID ASSO	KSZ959	154.1750	PF
	OSSIPEE VALLEY MUTUAL AID ASSO	KSZ959	154.2650	PF
	OSSIPEE VALLEY MUTUAL AID ASSO	KSZ959	154.2950	PF
	OSSIPEE VALLEY MUTUAL AID ASSO	KSZ959	154.3400	PF
BARNSTEAD	BARNSTEAD, TOWN OF	WNDE750	151.0850	PH
CHICHESTER	MEEHAN, EDWARD J	KQL822	47.4600	PS
DURHAM	DURHAM, TOWN OF	KNCJ393	158.7450	PL
LACONIA	LACONIA, CITY OF	KCE766	156.1800	PH
RAYMOND	RAYMOND, TOWN OF	KSO992	154.1300	PF
RAYMOND	RAYMOND, TOWN OF	KSO992	154.1900	PF
RAYMOND	RAYMOND, TOWN OF	KSO992	154.2800	PF

New Jersey

City	Licensee	Callsign	Freq	Sr.
	FRANKLIN, BOROUGH OF	WPHX972	453.2125	PL
	FRANKLIN, BOROUGH OF	WPHX972	458.2125	PL
	HIGHLAND LAKES, TOWNSHIP OF	WQG768	46.1000	PF
	HIGHLAND LAKES, TOWNSHIP OF	WQG768	46.4000	PF
	OCEAN, TOWNSHIP OF	KNIQ393	154.1750	PF
	OCEAN, TOWNSHIP OF	KNIQ393	154.2800	PF
	OCEAN, TOWNSHIP OF	KNIQ393	154.4300	PF
	ORTHO MC NEIL PHARMACEUTICAL F	WPAY658	155.2050	PM
	ORTHO MC NEIL PHARMACEUTICAL F	WPAY658	155.3400	PM
	PATERSON, CITY OF	KVF808	465.2250	PP
	PATERSON, CITY OF	KVF808	465.2500	PP
	PATERSON, CITY OF	KVF808	465.2750	PP
	PATERSON, CITY OF	KVF808	465.3000	PP
	WARREN, COUNTY OF	WPGA538	159.1800	PH
ATCO	WATERFORD, TOWNSHIP OF	WPHX976	154.0250	PL
BLAIRSTOWN	WARREN, COUNTY OF	WPGA538	159.1800	PH
BOGOTA	BOGOTA, BOROUGH OF	KTT895	155.2050	PS
BRIDGEPORT	NEW JERSEY, STATE OF	WNDC568	151.1225	PH
CHERRY HIL	NEW JERSEY, STATE OF	WNDC568	151.1225	PH
CHERRY HIL	NEW JERSEY, STATE OF	WNDC568	156.0525	PH
CLAYTON	GLOUCESTER, COUNTY OF	KNAN655	153.7850	PL
CLAYTON	GLOUCESTER, COUNTY OF	KNAN655	153.8450	PL
CLAYTON	GLOUCESTER, COUNTY OF	KNAN655	155.0850	PL
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	154.6800	PP
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	154.7250	PP
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	154.8750	PP
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	155.4750	PP
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	155.6400	PP
COLTS NECK	COLTS NECK, TOWNSHIP OF	WNFX722	158.9700	PP
DUMONT	DUMONT, BOROUGH OF	WPHP786	45.7200	PH
FLEMINGTON	BUCKS, COUNTY OF	KJW567	501.3125	PP
FLEMINGTON	BUCKS, COUNTY OF	KJW567	501.5625	PP
HADDONFIEL	HADDONFIELD AMBULANCE ASSOCIAT	KXG922	155.2350	PS
HALEDON	PATERSON, CITY OF	KVF808	460.2750	PP
HARMONY	WARREN, COUNTY OF	WPGA538	159.1800	PH
ISLAND HEI	ISLAND HEIGHTS, BOROUGH OF	WIM230	508.9875	PL
ISLAND HEI	ISLAND HEIGHTS, BOROUGH OF	WIM230	509.6375	PL
ISLAND HEI	ISLAND HEIGHTS, BOROUGH OF	WIM230	511.9875	PL
LOGAN TOWN	NEW JERSEY, STATE OF	WNDC568	156.0525	PH
MAHWAH	BERGEN, COUNTY OF	KJB254	39.9800	PL
MAHWAH	BERGEN, COUNTY OF	KJB254	158.9400	PL
MANSFIELD	WARREN, COUNTY OF	WPGA538	159.1800	PH
PATERSON	PATERSON, CITY OF	KVF808	154.6800	PP
PATERSON	PATERSON, CITY OF	KVF808	155.4750	PP
PATERSON	PATERSON, CITY OF	KVF808	460.2250	PP
PATERSON	PATERSON, CITY OF	KVF808	460.2500	PP
PATERSON	PATERSON, CITY OF	KVF808	460.3000	PP
PATERSON	PATERSON, CITY OF	KVF808	465.2250	PP
PATERSON	PATERSON, CITY OF	KVF808	465.2500	PP
PATERSON	PATERSON, CITY OF	KVF808	465.2750	PP
PATERSON	PATERSON, CITY OF	KVF808	465.3000	PP
PERRINEVIL	MILLSTONE, TOWNSHIP OF	WPHS329	155.1150	PL
SEA BRIGHT	SEA BRIGHT, BOROUGH OF	WNST459	155.1150	PL
SEA GIRT	SEA GIRT, BOROUGH OF	WPHS456	158.9400	PL
SEASIDE PA	SEASIDE PARK, CITY OF	WNDC551	39.9000	PL
UPPER PENN	NEW JERSEY, STATE OF	WNDC568	156.0525	PH
WEST NEW Y	WEST NEW YORK, TOWNSHIP OF	WPHU784	155.2650	PS
WYCKOFF	WYCKOFF, TOWNSHIP OF	KA73383	33.8600	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	KA73383	154.1750	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	KA73383	154.2800	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	33.8600	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	153.8300	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	154.0700	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	154.1450	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	154.1750	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	154.2650	PF
WYCKOFF	WYCKOFF, TOWNSHIP OF	WQH737	154.2800	PF

New Mexico

City	Licensee	Callsign	Freq	Sr.
	EDDY, COUNTY OF	WFR334	155.8800	PL
	LAKESHORE FIRE DEPT	WQJ359	154.2500	PF
	LAKESHORE FIRE DEPT	WQJ359	154.3100	PF
ALBUQUERQU	HELWEG & FARMER TRANSPORTATION	KEY854	47.5400	PS
ALBUQUERQU	NEW MEXICO, STATE OF	KXZ440	155.9850	PL
ANIMAS	ANIMAS FOUNDATION	WNZA959	151.3550	PO
ANIMAS	ANIMAS FOUNDATION	WNZA959	159.3900	PO
AZTEC	NEW MEXICO, STATE OF	WNTZ539	953.9500	PL
AZTEC	NEW MEXICO, STATE OF	WNTZ540	957.5500	PL
BELEN	BELEN, CITY OF	KKS801	156.2100	PP
COLUMBUS	LUNA, COUNTY OF	KXQ924	155.8350	PL
COLUMBUS	LUNA, COUNTY OF	KXQ924	158.8800	PL
LAS CRUCES	NEW MEXICO, STATE OF	WPHV681	154.9650	PL
LAS CRUCES	NEW MEXICO, STATE OF	WPHV681	158.8200	PL
LOS LUNAS	LOS LUNAS, VILLAGE OF	WNSU511	154.1450	PF

New York

City	Licensee	Callsign	Freq	Sr.
	DEPEW, VILLAGE OF	KCJ969	155.3700	PP
	DEPEW, VILLAGE OF	KCJ969	155.5800	PP
	DEPEW, VILLAGE OF	KCJ969	155.6550	PP
	DEPEW, VILLAGE OF	KCJ969	155.7300	PP
	EAST MORICHES FIRE DISTRICT	KEG617	46.3000	PF
	EAST MORICHES FIRE DISTRICT	KEG617	46.3600	PF
	EAST MORICHES FIRE DISTRICT	KEG617	46.3800	PF
	EAST MORICHES FIRE DISTRICT	KEG617	46.4000	PF
	EAST MORICHES FIRE DISTRICT	KEG617	46.4600	PF
	EAST MORICHES FIRE DISTRICT	KEG617	46.4800	PF
	FARRELL, ROBERT D	KEH467	46.0000	PS
	HERKIMER, COUNTY OF	KYU737	155.4000	PS
	LIVINGSTON, COUNTY OF	KED602	45.8800	PF
	LIVINGSTON, COUNTY OF	KED602	46.1600	PF
	LIVINGSTON, COUNTY OF	KED602	46.2000	PF
	LIVINGSTON, COUNTY OF	KED602	46.2200	PF
	ORANGE COUNTY	WPHW589	156.0600	PP
	ORANGE COUNTY	WPHW589	159.1350	PP
	OSSINING, VILLAGE OF	KBE467	46.1400	PF
	OSSINING, VILLAGE OF	KBE467	46.2200	PF
	OSSINING, VILLAGE OF	KBE467	46.2600	PF
	OSSINING, VILLAGE OF	KBE467	46.4200	PF
	OSSINING, VILLAGE OF	KBE467	460.5875	PF
	OSSINING, VILLAGE OF	KBE467	460.6125	PF
	OSSINING, VILLAGE OF	KBE467	460.6375	PF
	OSSINING, VILLAGE OF	KBE467	465.5875	PF
	OSWEGO, COUNTY OF	KB73509	46.2800	PF
	PITTSFORD VOLUNTEER AMBULANCE	KTG548	155.2950	PS
	RANSOMVILLE BUS LINES INC	KGY260	155.2200	PS
	SALAMANCA, CITY OF	WNDA451	155.3700	PP
	SALAMANCA, CITY OF	WNDA452	153.9050	PL
	STITTVILLE FIRE DISTRICT	KUY443	154.1300	PF
	TALLMAN FIRE DISTRICT	KED748	46.0800	PF
	TALLMAN FIRE DISTRICT	KED748	46.1800	PF
	TALLMAN FIRE DISTRICT	KED748	458.5750	PF
	ULSTER, COUNTY OF	WPHS661	155.0250	PP
	ULSTER, COUNTY OF	WPHS661	159.3450	PP
	YATES, COUNTY OF	WNDD440	458.2500	PL
BEACON	ORANGE COUNTY	WPHW589	191.1350	PP
BEAVER FAL	BEAVER RIVER CENTRAL SCHOOL DI	WNDD330	155.2650	PS
BELFORT	POWER AUTHORITY OF THE STATE O	WNTZ631	957.1500	PL
BINGHAMTON	CHENANGO, TOWN OF	KNEB759	155.1000	PL
BUFFALO	ERIE, COUNTY OF	WNDE794	460.0500	PP
CANANDAIGU	CANANDAIGUA, CITY OF	KFA463	45.3200	PL
CHENANGO F	CHENANGO, TOWN OF	KNEB759	155.1000	PL
CORTLAND	CORTLANDVILLE FIRE DISTRICT	WPCS771	154.3400	PF
ELLENVILLE	ULSTER, COUNTY OF	WPHS661	155.0250	PP
FINCHVILLE	ORANGE COUNTY	WPHW589	159.1350	PP
HAMBURG	ARMOR VOLUNTEER FIRE COMPANY I	WPHS316	154.3100	PF
HAMILTON	HAMILTON, VILLAGE OF	WNDG655	47.8000	IW
HIGHLAND	ULSTER, COUNTY OF	WPHS661	155.0250	PP
HOMER	CORTLANDVILLE FIRE DISTRICT	WPCS771	154.3400	PF
HYDE PARK	HYDE PARK FIRE & WATER DISTRIC	KJE238	46.3600	PF
ITHACA	NEW YORK, STATE OF	KNAB443	154.6950	PP
ITHACA	NEW YORK, STATE OF	KNAB443	155.1900	PP
ITHACA	NEW YORK, STATE OF	KNAB443	155.3700	PP
ITHACA	NEW YORK, STATE OF	KNAB443	155.4750	PP
ITHACA	NEW YORK, STATE OF	KNAB443	155.6550	PP
MENDON	MENDON FIRE DISTRICT	KEF435	154.2500	PF
MIDDLEVILL	E W COREY HOSE COMPANY	WQG758	154.2050	PF
NEW YORK	NEW YORK CITY TRANSIT AUTHORIT	KGK700	470.3875	PL
NEW YORK	NEW YORK CITY TRANSIT AUTHORIT	KGK700	473.3875	PL
NEW YORK	NEW YORK CITY TRANSIT AUTHORIT	WIK638	470.3875	PL
NEW YORK	NEW YORK CITY TRANSIT AUTHORIT	WIK638	473.3875	PL
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.0000	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.0250	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.0500	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.0750	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.1000	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.1250	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.1500	PS
NEW YORK C	NEW YORK CITY HEALTH & HOSPITA	WRW670	463.1750	PS
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	46.3000	PF
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	46.3800	PF
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	46.4400	PF
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	46.4600	PF
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	453.7125	PF
NISSEQUOGU	NISSEQUOGUE, VILLAGE OF	KNBU895	458.7125	PF
ONONDAGA	CENTRAL NEW YORK REGIONAL TRAN	KWH436	453.3250	PL
PAINTED PO	ERWIN, TOWN OF	WQG804	37.9000	PH
PAINTED PO	ERWIN, TOWN OF	WQG804	37.9400	PH
QUOGUE	QUOGUE, VILLAGE OF	WYW927	155.3700	PP
QUOGUE	QUOGUE, VILLAGE OF	WYW927	159.0300	PP
REDWOOD	ALEXANDRIA, TOWN OF	KIZ248	37.9400	PH
SPRINGFIEL	CHERRY VALLEY ANIMAL HOSPITAL	KWX475	47.6200	PS
SYRACUSE	SYRACUSE, CITY OF	KTC833	154.9950	PL

City	Licensee	Callsign	Freq	Sr.
TULLY	OTISCO, TOWN OF	WPHW866	159.1950	PH
WOODSTOCK	ULSTER, COUNTY OF	WPHS661	155.0250	PP

Ohio

City	Licensee	Callsign	Freq	Sr.
	ALLEN TOWNSHIP FIRE DEPT	KXR787	154.2500	PF
	ANDERSON, TOWNSHIP OF	WPHW667	158.9100	PL
	BAY VIEW, VILLAGE OF	KV9854	46.0600	PF
	BERLIN, TOWNSHIP OF	KA68976	155.2200	PS
	BERLIN, TOWNSHIP OF	KA68976	155.2800	PS
	BERLIN, TOWNSHIP OF	KA68976	155.3400	PS
	BOARD OF CUYAHOGA COUNTY COMMI	KJF345	155.1600	PS
	BOARD OF CUYAHOGA COUNTY COMMI	KJF345	155.3400	PS
	BOARD OF CUYAHOGA COUNTY COMMI	KJF345	155.4000	PS
	BUTLER, TOWNSHIP OF	KQE627	33.4200	PF
	BUTLER, TOWNSHIP OF	KQE627	33.4600	PF
	BUTLER, TOWNSHIP OF	KQE627	33.6400	PF
	BUTLER, TOWNSHIP OF	KQE627	154.2800	PF
	BUTLER, TOWNSHIP OF	KQE627	460.5875	PF
	BUTLER, TOWNSHIP OF	KQE627	460.6125	PF
	BUTLER, TOWNSHIP OF	KQE627	465.6125	PF
	DEFIANCE, COUNTY OF	WPHV954	159.2850	PF
	ELMWOOD PLACE, VILLAGE OF	KCT675	154.1900	PF
	HENRY, COUNTY OF	KA78227	155.8500	PP
	JEFFERSON, TOWNSHIP OF	KJP493	33.8600	PF
	JEFFERSON, TOWNSHIP OF	KJP493	33.9200	PF
	JEFFERSON, TOWNSHIP OF	KJP493	465.5875	PF
	JEFFERSON, TOWNSHIP OF	WPHW670	158.9850	PH
	LAKE, TOWNSHIP OF	WPHR603	460.2000	PP
	LAKE, TOWNSHIP OF	WPHR603	465.2000	PP
	MANTUA, TOWNSHIP OF	WPHS321	153.9950	PL
	RADNOR, TOWNSHIP OF	WSW331	33.8200	PF
	SAINT MARYS, CITY OF	KBP651	155.3700	PP
	SAINT MARYS, CITY OF	KBP651	155.8500	PP
	TUSCARAWAS, COUNTY OF	KBC201	37.9800	PH
	UNITED AMBULANCE SERVICE INC	KNJU589	155.1600	PS
	UNITED AMBULANCE SERVICE INC	KNJU589	155.3400	PS
ALLIANCE	WASHINGTON, TOWNSHIP OF	WQC269	460.5750	PF
ASHLAND	ASHLAND, CITY OF	KTS556	153.8150	PL
ASHLAND	ASHLAND, CITY OF	KTS556	155.0250	PL
BROOKVILLE	BROOKVILLE, VILLAGE OF	KQE878	155.0700	PP
BROOKVILLE	BROOKVILLE, VILLAGE OF	KQE878	155.3700	PP
BROOKVILLE	BROOKVILLE, VILLAGE OF	KQE878	155.4150	PP
BROOKVILLE	BROOKVILLE, VILLAGE OF	KQE878	158.9100	PP
CENTER	OHIO, STATE OF	KTE369	151.4750	PO
CHESHIRE	GALLIA, COUNTY OF	WPHT673	453.0750	PM
CHESTERLAN	CHESTER, TOWNSHIP OF	KTV664	45.8800	PF
CHESTERLAN	CHESTER, TOWNSHIP OF	KTV664	46.2400	PF
CHESTERLAN	CHESTER, TOWNSHIP OF	KTV664	46.4000	PF
CONTINENTA	CONTINENTAL, VILLAGE OF	KLO383	154.1600	PF
CONTINENTA	CONTINENTAL, VILLAGE OF	KLO383	154.2500	PF
CONTINENTA	CONTINENTAL, VILLAGE OF	KLO383	154.2800	PF
CROWN CITY	GALLIA, COUNTY OF	WPHT673	453.0250	PM
DEFIANCE	DEFIANCE, CITY OF	KNEZ932	155.7150	PL
DEFIANCE	DEFIANCE, COUNTY OF	WPHV954	159.2850	PF
DUBLIN	DUBLIN, CITY OF	WPHW865	453.1000	PL
DUBLIN	DUBLIN, CITY OF	WPHW865	458.1000	PL
FINDLAY	FINDLAY, CITY OF	KQH416	154.2050	PF
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	453.0250	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	453.0750	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	458.0250	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	458.0750	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	462.9500	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	462.9750	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.0000	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.0250	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.0500	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.0750	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.1000	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.1250	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.1500	PM
GALLIPOLIS	GALLIA, COUNTY OF	WPHT673	463.1750	PM
GERMANTOWN	GERMANTOWN, VILLAGE OF	WPHW601	153.8300	PF
GERMANTOWN	GERMANTOWN, VILLAGE OF	WPHW601	154.2650	PF
GERMANTOWN	GERMANTOWN, VILLAGE OF	WPHW601	154.2800	PF
GERMANTOWN	GERMANTOWN, VILLAGE OF	WPHW601	154.2950	PF
GLOUSTER	GLOUSTER, VILLAGE OF	WNSU343	154.9950	PL
GREENFIELD	GREENFIELD, CITY OF	KQD320	39.5800	PP
GREENFIELD	GREENFIELD, CITY OF	KQD320	154.8000	PP
GREENWICH	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	46.0600	PF
GREENWICH	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	46.2400	PF
GREENWICH	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	154.2200	PF
GREENWICH	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	154.2800	PF
GREENWICH	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	159.2850	PF
HAMILTON	FORT HAMILTON HOSPITAL ASSOCIA	KYQ576	155.2800	PS
IRONDALE	IRONDALE, VILLAGE OF	KYF440	154.0700	PF
KETTERING	KETTERING, CITY OF	WNTF620	956.9500	PP
KETTERING	KETTERING, CITY OF	WNTF621	958.1500	PP
KETTERING	KETTERING, CITY OF	WNTF622	957.4500	PP
KETTERING	KETTERING, CITY OF	WNTF623	957.7500	PP
KETTERING	KETTERING, CITY OF	WNTF624	958.8500	PP
KETTERING	KETTERING, CITY OF	WNTF625	956.6500	PP
MANSFIELD	MANSFIELD, CITY OF	KQG674	153.7700	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	154.2500	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	154.2800	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	154.3550	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	154.3850	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	453.7000	PF
MANSFIELD	MANSFIELD, CITY OF	KQG674	458.7000	PF
MARIETTA	MARIETTA, TOWNSHIP OF	WNSD952	154.0250	PL
MAUMEE	MAUMEE, CITY OF	KZV207	153.7700	PF
MAUMEE	MAUMEE, CITY OF	KZV207	153.8300	PF
MAUMEE	MAUMEE, CITY OF	KZV207	154.2050	PF
MAUMEE	MAUMEE, CITY OF	KZV207	154.2800	PF
MC CONNELS	MORGAN, COUNTY OF	KQD750	39.4800	PP
MC CONNELS	MORGAN, COUNTY OF	KQD750	39.5800	PP
MC CONNELS	MORGAN, COUNTY OF	KQD750	39.7000	PP
MC CONNELS	MORGAN, COUNTY OF	KQD750	465.0375	PP
MC CONNELS	MORGAN, COUNTY OF	KQD750	465.0625	PP
MILLBURY	LAKE, TOWNSHIP OF	WPHR603	460.2000	PP
NEW LONDON	TRI COMMUNITY JOINT FIRE DISTR	KNAK467	159.2850	PF
NEW VIENNA	NEW VIENNA, VILLAGE OF	WPHT647	72.2600	IW
NORTHWOOD	NORTHWOOD, CITY OF	KVF558	460.3250	PP
OTTAWA	GREENSBURG, TOWNSHIP OF	WPHN933	159.1800	PH
PAINESVILL	LAKE, COUNTY OF	WPHS637	75.4200	PL
PAINESVILL	LAKE, COUNTY OF	WPHS637	453.6250	PL
POMEROY	MEIGS, COUNTY OF	WNSV574	460.0500	PP
PORTAGE	CENTRAL JOINT FIRE DISTRICT	KQH427	154.2200	PF
RAVENNA	RAVENNA, CITY OF	KBR491	153.8300	PF
RAVENNA	RAVENNA, CITY OF	KBR491	154.1300	PF
RAVENNA	RAVENNA, CITY OF	KBR491	154.2350	PF
RAVENNA	RAVENNA, CITY OF	KBR491	154.3100	PF
SAINT MARY	SAINT MARYS, CITY OF	KBP651	155.1300	PP
STRYKER	SPRINGFIELD, TOWNSHIP OF	KKE905	154.3100	PF
THURMAN	GALLIA, COUNTY OF	WPHT673	453.0250	PM
WARSAW	HOLMES, COUNTY OF	WNDD696	155.8650	PL
WAYNESBURG	SANDY, TOWNSHIP OF	WPHV684	453.1250	PF
WAYNESBURG	SANDY, TOWNSHIP OF	WPHV684	458.1250	PF
WESTERVILL	WESTERVILLE, CITY OF	KJU962	153.8750	PL
WESTERVILL	WESTERVILLE, CITY OF	KJU962	155.0400	PL
WESTERVILL	WESTERVILLE, CITY OF	KQB975	155.3700	PP
WESTERVILL	WESTERVILLE, CITY OF	KQB975	460.3250	PP
WESTERVILL	WESTERVILLE, CITY OF	KQB975	460.5000	PP
WESTERVILL	WESTERVILLE, CITY OF	KQB975	465.3250	PP
WESTERVILL	WESTERVILLE, CITY OF	KQB975	465.4250	PP
WILMINGTON	ADAMS, TOWNSHIP OF	WNDF844	156.1050	PH

Oklahoma

City	Licensee	Callsign	Freq	Sr.
	EDMOND, CITY OF	WNDD474	155.2200	PS
	MC INTOSH, COUNTY OF	WPHQ576	153.9050	PL
	PERRY, CITY OF	WNPY613	155.0850	PP
	PERRY, CITY OF	WNPY613	155.4900	PP
	PERRY, CITY OF	WNPY613	156.1500	PP
	RAVIA, CITY OF	WQC288	155.1000	PL
BILLINGS	PERRY, CITY OF	WNPY613	156.1500	PP
CARNEGIE	CARNEGIE, CITY OF	WQJ326	155.9250	PL
EL RENO	OKLAHOMA, STATE OF	WPHX980	151.0100	PL
EL RENO	OKLAHOMA, STATE OF	WPHX980	154.0550	PL
EUFAULA	MC INTOSH, COUNTY OF	WPHQ576	155.9550	PL
MANNFORD	BASIN VOLUNTEER FIRE DEPARTMEN	214141	154.2650	PF
PERRY	PERRY, CITY OF	WNPY613	155.0850	PP
PERRY	PERRY, CITY OF	WNPY613	155.4900	PP
PERRY	PERRY, CITY OF	WNPY613	155.6700	PP
PERRY	PERRY, CITY OF	WNPY613	156.1500	PP
PONCA CITY	PONCA CITY, CITY OF	WPHQ572	153.8150	PL
PONCA CITY	PONCA CITY, CITY OF	WPHQ572	158.7600	PL
PONCA CITY	PONCA CITY, CITY OF	WZM798	155.9550	PL
POTEAU	POTEAU, CITY OF	WNST216	155.3700	PP
SHIDLER	SHIDLER SCHOOLS	WNCU662	155.2800	PS

Oregon

City	Licensee	Callsign	Freq	Sr.
	OREGON, STATE OF	WNHE496	151.1000	PH
ADRIAN	OREGON, STATE OF	WPHW864	151.1600	PO
ASHLAND	ASHLAND, CITY OF	KOA560	155.0100	PP
ASHLAND	ASHLAND, CITY OF	KOA560	155.4750	PP
ASHLAND	ASHLAND, CITY OF	KOA560	155.4900	PP
ASHLAND	ASHLAND, CITY OF	KOA560	155.5200	PP
ASHLAND	ASHLAND, CITY OF	KOA560	158.7900	PP
BAKER CITY	OREGON, STATE OF	WPHW877	151.1600	PO
BAKER CITY	OREGON, STATE OF	WPHW877	151.4300	PO
BAKER CITY	OREGON, STATE OF	WPHW877	151.4600	PO
BAKER CITY	OREGON, STATE OF	WPHW877	151.4750	PO
BEATTY	OREGON, STATE OF	KCZ478	151.2050	PO
BEND	DESCHUTES, COUNTY OF	WPHW808	155.1300	PP
COTTAGE GR	OREGON, STATE OF	WPHW992	154.8450	PP
DRAIN	OREGON, STATE OF	WPHW992	154.8450	PP
EUGENE	OREGON, STATE OF	WPHW992	154.8450	PP
HAMPTON	DESCHUTES, COUNTY OF	WPHW808	155.1300	PP
HOOD RIVER	SKAMANIA COUNTY FIRE DISTRICT	WPHV239	460.6250	PF
JOSEPH	OREGON, STATE OF	WNDE754	151.1600	PO
KAHNEETA	WARM SPRINGS FIRE AND SAFETY	WPHV687	154.2500	PF
KLAMATH FA	OREGON, STATE OF	KOF403	151.2050	PO
LA PINE	DESCHUTES, COUNTY OF	WPHW808	155.1300	PP
LINCOLN CI	OREGON, STATE OF	WPHW876	151.4450	PO
LINCOLN CI	OREGON, STATE OF	WPHW876	159.3900	PO
REDMOND	CENTRAL OREGON DISTRICT HOSPIT	KSZ271	155.3400	PS

City	Licensee	Callsign	Freq	Sr.
REDMOND	CENTRAL OREGON DISTRICT HOSPIT	KSZ271	155.4000	PS
REDMOND	DESCHUTES, COUNTY OF	WPHW808	155.1300	PP
REEDSPORT	OREGON, STATE OF	WPHW875	151.4600	PO
REEDSPORT	OREGON, STATE OF	WPHW875	151.4750	PO
REEDSPORT	OREGON, STATE OF	WPHW875	159.3900	PO
SIMNASHO	WARM SPRINGS FIRE AND SAFETY	WPHV687	154.2500	PF
TROUTDALE	OREGON, STATE OF	WNTZ475	954.7500	PH
WARM SPRIN	WARM SPRINGS FIRE AND SAFETY	WPHV687	154.2500	PF

Pennsylvania

City	Licensee	Callsign	Freq	Sr.
	CARBON, COUNTY OF	WPHW595	453.5875	PL
	CARBON, COUNTY OF	WPHW595	453.6875	PL
	CARBON, COUNTY OF	WPHW595	453.8875	PL
	CARBON, COUNTY OF	WPHW595	458.5875	PL
	CARBON, COUNTY OF	WPHW595	458.8875	PL
	CRAWFORD, COUNTY OF	KQT941	45.1000	PP
	CRAWFORD, COUNTY OF	KQT941	45.1400	PP
	CRAWFORD, COUNTY OF	KQT941	155.3100	PP
	CRAWFORD, COUNTY OF	WPHD222	460.5750	PF
	CRAWFORD, COUNTY OF	WPHD222	460.6250	PF
	CRAWFORD, COUNTY OF	WPHD222	465.5750	PF
	CRAWFORD, COUNTY OF	WPHD222	465.6250	PF
	EXETER, TOWNSHIP OF	KT7426	154.3100	PF
	GHS PARKVIEW HOSPITAL	WQL996	155.3400	PS
	GLEN ROCK, CITY OF	WNST501	154.7700	PP
	HANOVER, BOROUGH OF	KGA217	45.9400	PP
	HUNTINGTON MILLS, TOWN OF	WPHT666	154.2800	PF
	INDIANA, COUNTY OF	KUY400	46.0400	PS
	LEHIGH, COUNTY OF	WNSR871	158.7450	PL
	LYCOMING, COUNTY OF	KA25502	33.7800	PF
	LYCOMING, COUNTY OF	KA25502	33.8400	PF
	LYCOMING, COUNTY OF	KA25502	33.8600	PF
	LYCOMING, COUNTY OF	KA25502	33.8800	PF
	LYCOMING, COUNTY OF	KA25502	46.0600	PF
	LYCOMING, COUNTY OF	KA25502	46.5000	PF
	LYCOMING, COUNTY OF	KA25502	153.9500	PF
	LYCOMING, COUNTY OF	KA25502	154.0100	PF
	LYCOMING, COUNTY OF	KA25502	154.3400	PF
	LYCOMING, COUNTY OF	KA25502	154.4000	PF
	LYCOMING, COUNTY OF	KA25502	154.4300	PF
	MILLERSBURG, BOROUGH OF	KGE613	33.9000	PF
	MILLERSBURG, BOROUGH OF	KGE613	33.9200	PF
	MILLERSBURG, BOROUGH OF	KGE613	33.9600	PF
	SHARON, CITY OF	WNSU581	153.7700	PF
	TRI COMMUNITY AMBULANCE SERVIC	KB71367	155.2050	PS
	TRI COMMUNITY AMBULANCE SERVIC	KB71367	155.2350	PS
	TRI COMMUNITY AMBULANCE SERVIC	KB71367	155.3400	PS
	TRI COMMUNITY AMBULANCE SERVIC	KB71367	155.4000	PS
	WHITEHALL, TOWNSHIP OF	WPHV682	460.3125	PP
	WHITEHALL, TOWNSHIP OF	WPHV682	465.3125	PP
	WILMERDING, BOROUGH OF	KNHU541	155.0550	PL
ABBOTTSTOW	ABBOTTSTOWN FIRE CO	KDY283	46.2000	PF
ALMONT	BUCKS, COUNTY OF	KJW567	501.5625	PP
ALMONT	BUCKS, COUNTY OF	KJW567	501.7875	PP
ARDMORE	LOWER MERION, TOWNSHIP OF	KGC984	33.7000	PF
ARDMORE	LOWER MERION, TOWNSHIP OF	KGC984	33.7600	PF
BRADENVILL	DERRY TOWNSHIP VOLUNTEER FIRE	KNHS217	33.6400	PF
BRICKVILLE	ELIZABETH, TOWNSHIP OF	WNCZ411	155.7750	PL
BUCKINGHAM	BUCKS, COUNTY OF	KJW567	501.1625	PP
BUCKINGHAM	BUCKS, COUNTY OF	KJW567	501.5125	PP
BUCKINGHAM	BUCKS, COUNTY OF	KJW567	501.5875	PP
CONNEAUT L	CRAWFORD, COUNTY OF	WPHD222	460.6250	PF
CONNEAUT L	CRAWFORD, COUNTY OF	WPHD222	465.6250	PF
DOWNINGTOW	DOWNINGTOWN, BOROUGH OF	WPHS289	153.7250	PL
DOYLESTOWN	BUCKS, COUNTY OF	KJW567	501.1625	PP
DOYLESTOWN	BUCKS, COUNTY OF	KJW567	501.2875	PP
DOYLESTOWN	BUCKS, COUNTY OF	KJW567	501.5125	PP
DOYLESTOWN	BUCKS, COUNTY OF	KJW567	501.5625	PP
DOYLESTOWN	BUCKS, COUNTY OF	KJW567	501.7625	PP
EMMAUS	EMMAUS, BOROUGH OF	KGE741	33.9600	PF
EMMAUS	EMMAUS, BOROUGH OF	KGE741	33.9800	PF
EMMAUS	EMMAUS, BOROUGH OF	KGE741	154.2950	PF
EMMAUS	EMMAUS, BOROUGH OF	KGE741	453.7375	PF
EMMAUS	EMMAUS, BOROUGH OF	KGE741	453.9375	PF
ERIE	HARBORCREEK, TOWNSHIP OF	KGE875	33.8800	PF
ERIE	HARBORCREEK, TOWNSHIP OF	KGE875	33.9400	PF
ERIE	HARBORCREEK, TOWNSHIP OF	KGE875	33.9600	PF
ERIE	HARBORCREEK, TOWNSHIP OF	KGE875	33.9800	PF
FAIRCHANCE	GREATER SMITHFIELD FAIRCHANCE	WPHV229	155.2950	PS
HADDONFIEL	HADDONFIELD AMBULANCE ASSOCIAT	KXG922	155.2350	PS
HANOVER	PENN, TOWNSHIP OF	WPHW599	46.3800	PF
HARBORCREE	HARBORCREEK, TOWNSHIP OF	KGE875	33.8800	PF
HARBORCREE	HARBORCREEK, TOWNSHIP OF	KGE875	33.9400	PF
HARBORCREE	HARBORCREEK, TOWNSHIP OF	KGE875	33.9600	PF
HARRISBURG	WEST HANOVER, TOWNSHIP OF	KUW818	453.2500	PL
HILLTOWN	HILLTOWN, TOWNSHIP OF	WNSR870	155.6250	PP
HOPWOOD	GREATER SMITHFIELD FAIRCHANCE	WPHV229	155.2950	PS
KENNERDELL	VENANGO, COUNTY OF	WPHV233	155.2800	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	462.9500	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	462.9750	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.0000	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.0250	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.0500	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.0750	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.1000	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.1250	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.1500	PM
KENNERDELL	VENANGO, COUNTY OF	WPHV233	463.1750	PM
LANCASTER	EAST LAMPETER, TOWNSHIP OF	WNCY310	155.5950	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.1875	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.2125	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.2625	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.5625	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.6625	PP
LANGHORNE	BUCKS, COUNTY OF	KJW567	501.7375	PP
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	45.9600	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	46.0000	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	150.7750	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	150.7900	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	462.9500	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	462.9750	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.0000	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.0250	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.0500	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.0750	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.1000	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.1250	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.1500	PM
LANGHORNE	FISHERS AMBULANCE SERVICE	WPHW883	463.1750	PM
LEWIS RUN	LAFAYETTE, TOWNSHIP OF	WPHW594	155.0400	PL
MEADVILLE	CRAWFORD, COUNTY OF	WPHD222	460.6250	PF
MEADVILLE	CRAWFORD, COUNTY OF	WPHD222	465.6250	PF
MILLERSBUR	MILLERSBURG, BOROUGH OF	KGE613	33.9600	PF
MONESSEN	MONESSEN, CITY OF	WNSU642	155.5650	PP
MONESSEN	MONESSEN, CITY OF	WNSU643	154.9800	PL
OIL CITY	VENANGO, COUNTY OF	WPHV233	462.9500	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	462.9750	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.0000	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.0250	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.0500	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.0750	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.1000	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.1250	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.1500	PM
OIL CITY	VENANGO, COUNTY OF	WPHV233	463.1750	PM
PHILADELPH	GHS PARKVIEW HOSPITAL	WQL996	155.3400	PS
PITTSBURGH	NORTH HILLS PASSAVANT HOSPITAL	KSM856	151.0550	PM
PITTSBURGH	NORTH HILLS PASSAVANT HOSPITAL	KSM856	155.3400	PM
PITTSBURGH	NORTH HILLS PASSAVANT HOSPITAL	KSM856	155.4000	PM
PITTSBURGH	NORTH HILLS PASSAVANT HOSPITAL	KSM856	462.9375	PM
PITTSBURGH	NORTH HILLS PASSAVANT HOSPITAL	KSM856	467.9375	PM
PLUM BOROU	UNITY VOLUNTEER FIRE DEPARTMEN	WQL928	33.8000	PF
PORTAGE	PORTAGE, BOROUGH OF	KNBI446	155.1750	PM
PORTAGE	PORTAGE, BOROUGH OF	KNBI446	155.2650	PM
PORTAGE	PORTAGE, BOROUGH OF	KNBI446	155.2950	PM
PORTAGE	PORTAGE, BOROUGH OF	KNBI446	155.3400	PM
PORTAGE	PORTAGE, BOROUGH OF	KNBI446	155.3850	PM
READING	BERKS, COUNTY OF	KNCB871	154.1000	PL
ROCHESTER	ROCHESTER, TOWNSHIP OF	WNHS437	159.1950	PH
SCRANTON	PENNSYLVANIA, COMMONWEALTH OF	WPHS909	453.1500	PL
SCRANTON	PENNSYLVANIA, COMMONWEALTH OF	WPHS909	458.1500	PL
SMETHPORT	SMETHPORT AREA AMBULANCE SERVI	WZT776	155.2200	PS
SPRING GRO	JACKSON, TOWNSHIP OF	WPHT668	159.0600	PH
SPRINGTOWN	BUCKS, COUNTY OF	KJW567	501.5625	PP
SPRINGTOWN	BUCKS, COUNTY OF	KJW567	501.5875	PP
SPRINGTOWN	BUCKS, COUNTY OF	KJW567	501.7875	PP
STATE COLL	CENTRE, COUNTY OF	WPHW491	462.9500	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	462.9750	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.0000	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.0250	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.0500	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.0750	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.1000	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.1250	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.1500	PM
STATE COLL	CENTRE, COUNTY OF	WPHW491	463.1750	PM
SUMMIT STA	WEST BRUNSWICK, TOWNSHIP OF	WNSQ647	461.4250	PL
TITUSVILLE	CRAWFORD, COUNTY OF	WPHD222	460.5750	PF
TITUSVILLE	CRAWFORD, COUNTY OF	WPHD222	465.5750	PF
WAYNESBORO	WASHINGTON, TOWNSHIP OF	WNST500	45.6200	PP
WAYNESBORO	WASHINGTON, TOWNSHIP OF	WNST500	45.6600	PP
WAYNESBORO	WASHINGTON, TOWNSHIP OF	WNST500	45.7000	PP
WEST MIFFL	DUQUESNE ANNEX VOLUNTEER FIRE	KNBB552	33.8000	PF
WEST MIFFL	DUQUESNE ANNEX VOLUNTEER FIRE	KNBB552	151.2200	PF
WEST MIFFL	DUQUESNE ANNEX VOLUNTEER FIRE	KNBB552	154.2500	PF
WILLIAMSPO	OLD LYCOMING TOWNSHIP VOLUNTEE	KXO946	154.4300	PF

Puerto Rico

City	Licensee	Callsign	Freq	Sr.
	MUNICIPAL DE SAN LORENZO	WPHU464	158.7900	PP

Rhode Island

City	Licensee	Callsign	Freq	Sr.
LINCOLN	LIME ROCK FIRE DISTRICT	WQL705	154.1600	PF

South Carolina

City	Licensee	Callsign	Freq	Sr.
	GEORGETOWN, CITY OF	WNSU572	153.9500	PF
	GEORGETOWN, CITY OF	WNSU572	154.2500	PF
	JONESVILLE FIRE DISTRICT	KXI890	46.4400	PF
	MC CORMICK, COUNTY OF	KAF962	155.1600	PS
	MC CORMICK, COUNTY OF	KAF962	155.3400	PS
	OCONEE MEMORIAL HOSPITAL	KFT258	155.2800	PS
	OCONEE MEMORIAL HOSPITAL	KFT258	155.3400	PS
	SPARTANBURG, CITY OF	WPHS479	465.1375	PL
ANDREWS	ANDREWS, CITY OF	KZQ602	154.0550	PL
COLUMBIA	SOUTH CAROLINA, STATE OF	WPHQ674	854.2375	GP
MARION	MARION, CITY OF	WPHW593	45.1800	PL
NORTH CHAR	NORTH CHARLESTON, CITY OF	WYV435	460.6250	PF
PENDLETON	FORT HILL NATURAL GAS AUTHORIT	WNTZ675	956.3312	PL
ROCK HILL	YORK, COUNTY OF	KWL345	158.7300	PP

South Dakota

City	Licensee	Callsign	Freq	Sr.
	BENNETT, COUNTY OF	KRR954	39.1000	PP
	BENNETT, COUNTY OF	KRR954	39.1600	PP
	BENNETT, COUNTY OF	KRR954	39.1800	PP
	BENNETT, COUNTY OF	KRR954	39.2000	PP
	BENNETT, COUNTY OF	KRR954	39.3200	PP
	YANKTON, CITY OF	KNFJ265	158.9400	PL
BERESFORD	BERESFORD, CITY OF	WNDC879	155.1450	PL
PRESHO	PRESHO, CITY OF	WPHX996	453.2250	PL
ROSEBUD	ROSEBUD HOUSING AUTHORITY	WPHS459	153.9200	PL
ROSEBUD	ROSEBUD HOUSING AUTHORITY	WPHS459	158.7450	PL
YANKTON	YANKTON, CITY OF	KNFJ265	155.7600	PL

Tennessee

City	Licensee	Callsign	Freq	Sr.
	DEKALB, COUNTY OF	WNMT274	155.2050	PS
	DEKALB, COUNTY OF	WNMT274	155.3400	PS
	HENRY, COUNTY OF	WNSS747	465.5750	PF
	STEWART, COUNTY OF	KXV594	155.2050	PS
	STEWART, COUNTY OF	KXV594	155.3400	PS
	VAN BUREN, COUNTY OF	WQR262	151.0850	PH
CLARKSVILL	CLARKSVILLE, CITY OF	WNPO578	153.4700	IW
CLARKSVILL	CLARKSVILLE, CITY OF	WSM429	451.0500	IW
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	151.0100	PH
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	153.9350	PH
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	155.8200	PH
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	156.1200	PH
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	156.1800	PH
ELIZABETHT	TENNESSEE, STATE OF	KNCH672	159.1950	PH
GREENBRIER	GREENBRIER, CITY OF	WNBE377	453.0500	PL
KINGSTON S	KINGSTON SPRINGS, CITY OF	KNJF931	46.1800	PF
LAWRENCEBU	LAWRENCE, COUNTY OF	KSL493	159.1200	PH
MURFREESBO	RUTHERFORD COUNTY RESCUE SQUAD	WPHT721	37.9000	PS
NEWPORT	JEFFERSON, COUNTY OF	WPHT701	460.6000	PF
RED BANK	RED BANK, CITY OF	KJU331	154.2950	PF
RED BANK	RED BANK, CITY OF	KJU331	154.3250	PF
RED BOILIN	RED BOILING SPRINGS, CITY OF	WQN727	37.1000	PL
RED BOILIN	RED BOILING SPRINGS, CITY OF	WQN727	37.2600	PL
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	151.0100	PH
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	153.9350	PH
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	155.8200	PH
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	156.1200	PH
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	156.1800	PH
SEVIERVILL	TENNESSEE, STATE OF	KNIM926	159.1800	PH
SEWANEE	STONES RIVER HOSPITAL INC	WYR637	152.0075	PM
SEWANEE	STONES RIVER HOSPITAL INC	WYR637	155.3400	PM

Texas

City	Licensee	Callsign	Freq	Sr.
	AUSTIN, CITY OF	WQC462	154.2350	PF
	GIDDINGS, CITY OF	KVN678	154.9500	PP
	GIDDINGS, CITY OF	KVN678	155.0100	PP
	GIDDINGS, CITY OF	KVN678	155.6850	PP
	NEW LONDON, CITY OF	WNDD383	154.2200	PF
	NEW LONDON, CITY OF	WNDD383	154.2800	PF
	ORANGE COUNTY AMBULANCE SERVIC	WQL925	155.2200	PS
	ORANGE COUNTY AMBULANCE SERVIC	WQL925	155.3400	PS
	TEXAS, STATE OF	KWF883	460.2250	PP
	TEXAS, STATE OF	KWF883	465.2500	PP
	TEXAS, STATE OF	KWF883	465.3500	PP
	WICHITA, COUNTY OF	KYY971	154.2800	PF
	WICHITA, COUNTY OF	KYY971	154.3100	PF
ARLINGTON	ARLINGTON COMMUNITY HOSPITAL I	KQR261	155.2800	PS
BEAUMONT	BEAUMONT, CITY OF	WPHT722	44.9200	PO
BEAUMONT	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	154.2800	PF
BEAUMONT	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	154.4300	PF
BEAUMONT	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	156.1050	PF
BEAUMONT	TEXAS, STATE OF	KKE469	154.6650	PP
BEVIL OAKS	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	154.2800	PF
BEVIL OAKS	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	154.4300	PF
BEVIL OAKS	BEVIL OAKS VOLUNTEER FIRE DEPA	WPBN574	156.1050	PF
CALVERT	CALVERT, CITY OF	WNXU712	154.8900	PP
CALVERT	CALVERT, CITY OF	WNXU712	154.9500	PP
CALVERT	CALVERT, CITY OF	WNXU712	155.6400	PP
CALVERT	CALVERT, CITY OF	WNXU712	156.0900	PP
CENTER	TEXAS, STATE OF	WPHW669	45.8000	PH
CENTER	TEXAS, STATE OF	WPHW669	47.1000	PH
CROWLEY	CROWLEY, CITY OF	WPHS475	154.8000	PP
CROWLEY	CROWLEY, CITY OF	WPHS475	156.1500	PP
DOMINO	DOMINO, CITY OF	WPHS454	153.8000	PP
DOMINO	DOMINO, CITY OF	WPHS454	159.0600	PP
FLOYDADA	FLOYDADA, CITY OF	WPHY628	153.9950	PL
FLOYDADA	FLOYDADA, CITY OF	WPHY628	158.8200	PL
FORNEY	FORNEY, CITY OF	WPHW488	151.2500	PF
FORNEY	FORNEY, CITY OF	WPHW488	154.4300	PF
FREDRICKSB	FREDRICKSBURG, CITY OF	KQG281	154.2350	PF
FREDRICKSB	FREDRICKSBURG, CITY OF	KQG281	154.4000	PF
GAIL	BORDEN COUNTY EMS	WPHV234	150.7750	PM
GAIL	BORDEN COUNTY EMS	WPHV234	155.3250	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	453.1250	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	462.9500	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	462.9750	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.0000	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.0250	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.0500	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.0750	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.1000	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.1250	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.1500	PM
GAINESVILL	COOKE, COUNTY OF	KNAE663	463.1750	PM
HALLETTSVI	LAVACA, COUNTY OF	WNSW679	158.7750	PL
HALLSVILLE	HALLSVILLE, CITY OF	KMA305	153.8750	PL
HENRIETTA	CLAY COUNTY MEMORIAL HOSPITAL	KXF542	155.3400	PS
HENRIETTA	CLAY COUNTY MEMORIAL HOSPITAL	KXF542	155.4000	PS
HILLSBORO	HILLSBORO, CITY OF	KCP760	155.6250	PP
HOUSTON	SUN BELT REGIONAL MEDICAL CENT	KWX367	155.3250	PS
LIVINGSTON	POLK, COUNTY OF	WPAG929	158.7600	PL
LUFKIN	TEXAS, STATE OF	WPHW669	45.8000	PH
MADISONVIL	TEXAS, STATE OF	WNYB998	47.0600	PH
MADISONVIL	TEXAS, STATE OF	WNYB998	47.2400	PH
MART	MART, CITY OF	WNST217	154.8450	PP
MART	MART, CITY OF	WNST217	158.9100	PP
MOODY	MOODY, CITY OF	WNST869	154.2500	PF
OLTON	OLTON, CITY OF	KVP589	154.1450	PF
PARIS	LAMAR, COUNTY OF	KKV670	154.9800	PL
PASADENA	BAYSHORE MEDICAL CENTER	WPHV230	155.2200	PS
RENO	RENO, CITY OF	WPHS340	37.0800	PL
SEGUIN	GUADALUPE, COUNTY OF	WPHW807	158.9100	PP
STERLING C	STERLING, COUNTY OF	KNEJ783	154.8150	PP
STERLING C	STERLING, COUNTY OF	KNEJ783	154.9500	PP
STERLING C	STERLING, COUNTY OF	KNEJ783	155.6560	PP
STERLING C	STERLING, COUNTY OF	WPHW806	37.1800	PL
STERLING C	STERLING, COUNTY OF	WPHW806	154.1000	PL
STERLING C	STERLING, COUNTY OF	WPHW806	155.8650	PL
STINNETT	HUTCHISON, COUNTY OF	WPHV240	154.3250	PF
STINNETT	HUTCHISON, COUNTY OF	WPHV240	159.0150	PF
TUSCOLA	SOUTH TAYLOR COUNTY EMERGENCY	WNST220	154.3250	PS
VALLEY MIL	VALLEY MILLS, CITY OF	WPHS328	154.8150	PP
VALLEY MIL	VALLEY MILLS, CITY OF	WPHS328	154.9500	PP
VALLEY MIL	VALLEY MILLS, CITY OF	WPHS328	155.8500	PP
VALLEY MIL	VALLEY MILLS, CITY OF	WPHS328	156.0300	PP
VALLEY MIL	VALLEY MILLS, CITY OF	WPHS328	158.9850	PP

Utah

City	Licensee	Callsign	Freq	Sr.
	GRAND COUNTY HOSPITAL SERVICE	WNDE804	155.3400	PS
FORT UNION	SALT LAKE, COUNTY OF	KNEQ465	158.8200	PP
FORT UNION	SALT LAKE, COUNTY OF	KNEQ465	158.8350	PP
FORT UNION	SALT LAKE, COUNTY OF	KNEQ465	159.0000	PP
FORT UNION	SALT LAKE, COUNTY OF	KNEQ465	159.0600	PP
FORT UNION	SALT LAKE, COUNTY OF	KNEQ465	159.4500	PP
GOULDINGS	ARIZONA, STATE OF	KCW366	154.9350	PP
GOULDINGS	ARIZONA, STATE OF	KCW366	453.0500	PP
GOULDINGS	ARIZONA, STATE OF	KCW366	460.3000	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	158.8200	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	158.8350	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	159.0000	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	159.0600	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	159.3300	PP
HOLLADAY	SALT LAKE, COUNTY OF	WNXW748	159.4500	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	158.8200	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	158.8350	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	159.0000	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	159.0600	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	159.3300	PP
KEARNS	SALT LAKE, COUNTY OF	WNXW748	159.4500	PP
LAYTON	UTAH, STATE OF	WNTZ584	1960.0000	PL
MAGNA	SALT LAKE, COUNTY OF	KOL243	453.4500	PL
MAGNA	SALT LAKE, COUNTY OF	WNXW748	151.3250	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	151.4450	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	153.9950	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	154.6500	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	154.7850	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	155.3700	PP
MAGNA	SALT LAKE, COUNTY OF	WNXW748	460.2750	PP
MIDVALE	SALT LAKE, COUNTY OF	KOL243	45.6000	PL
MIDVALE	SALT LAKE, COUNTY OF	KOL243	453.4500	PL
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	151.3250	PP

City	Licensee	Callsign	Freq	Sr.
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	151.4450	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	153.9950	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	154.6500	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	154.7850	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	155.3700	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	155.4750	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	158.8200	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	158.8350	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	159.0000	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	159.0600	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	159.3300	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	159.4500	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	460.2750	PP
MURRAY	SALT LAKE, COUNTY OF	KNEQ465	465.2750	PP
OGDEN	UTAH, STATE OF	WBG57	1880.0000	PL
RICHFIELD	UTAH, STATE OF	KRI630	158.7900	PP
RICHFIELD	UTAH, STATE OF	KRI630	159.0900	PP
RICHFIELD	UTAH, STATE OF	WNRU860	151.0250	PL
RIVERTON	SALT LAKE, COUNTY OF	KNEQ465	158.8200	PP
RIVERTON	SALT LAKE, COUNTY OF	KNEQ465	158.8350	PP
RIVERTON	SALT LAKE, COUNTY OF	KNEQ465	159.0000	PP
RIVERTON	SALT LAKE, COUNTY OF	KNEQ465	159.0600	PP
RIVERTON	SALT LAKE, COUNTY OF	KNEQ465	159.4500	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	151.3250	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	151.4450	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	153.9950	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	154.6500	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	154.7850	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	155.3700	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	155.4750	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	158.8200	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	158.8350	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	159.0000	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	159.0600	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	159.4500	PP
SALT LAKE	SALT LAKE, COUNTY OF	WNXW748	465.2750	PP

Virginia

City	Licensee	Callsign	Freq	Sr.
	BRUNSWICK VOLUNTEER RESCUE SQU	KA34478	155.2050	PS
	BRUNSWICK VOLUNTEER RESCUE SQU	KA34478	155.2800	PS
	BRUNSWICK VOLUNTEER RESCUE SQU	KA34478	155.3400	PS
	FRANKLIN REDEVELOPMENT AND HOU	WPHS216	458.4250	PL
	LOUDOUN, COUNTY OF	WIM234	491.6875	PP
	LOUDOUN, COUNTY OF	WIM234	491.9375	PP
	LOUDOUN, COUNTY OF	WIM234	492.1875	PP
	PATRICK, COUNTY OF	WNIA928	151.1300	PL
	PATRICK, COUNTY OF	WNIA928	154.6500	PL
	PATRICK, COUNTY OF	WNIA928	155.1000	PL
	PATRICK, COUNTY OF	WNIA928	155.8350	PL
	PATRICK, COUNTY OF	WNIA928	158.9250	PL
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4500	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4750	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7000	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7250	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9625	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9875	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	867.7875	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	867.9000	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.1750	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.3375	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6000	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6250	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8500	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8750	YF
	PRINCE WILLIAM, COUNTY OF	WPHP905	868.9500	YF
	PRINCE WILLIAM, COUNTY OF	WPHP906	866.0125	GF
	PRINCE WILLIAM, COUNTY OF	WPHP906	866.5125	GF
	PRINCE WILLIAM, COUNTY OF	WPHP906	867.0125	GF
	PRINCE WILLIAM, COUNTY OF	WPHP906	867.5125	GF
	PRINCE WILLIAM, COUNTY OF	WPHP906	868.0125	GF
	PRINCE WILLIAM, COUNTY OF	WPHP907	866.1750	GF
	PRINCE WILLIAM, COUNTY OF	WPHP907	867.7250	GF
	ROANOKE, COUNTY OF	WNSU450	453.5500	PL
	ROANOKE, COUNTY OF	WNSU450	458.5500	PL
ACCOMAC	VIRGINIA, COMMONWEALTH OF	WPEK290	151.2800	PO
ARLINGTON	ARLINGTON HOSPITAL	KQR348	155.2200	PS
ASHLAND	ASHLAND, TOWN OF	WZM878	155.1450	PL
BULL RUN	LOUDOUN, COUNTY OF	WIM234	488.6875	PP
BULL RUN	LOUDOUN, COUNTY OF	WIM234	488.9375	PP
BULL RUN	LOUDOUN, COUNTY OF	WIM234	489.1875	PP
CHAMBLISSB	CHAMBLISSBURG RESCUE SQUAD INC	WPHW496	453.1750	PM
CHAMBLISSB	CHAMBLISSBURG RESCUE SQUAD INC	WPHW496	458.1750	PM
CHESTERFIE	CHESTERFIELD, COUNTY OF	KXV468	153.7550	PL
CUMBERLAND	VIRGINIA, COMMONWEALTH OF	WPHQ588	159.0000	PP
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4500	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4750	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7000	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7250	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9625	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9875	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	867.7875	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	867.9000	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.1750	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.3375	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6000	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6250	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8500	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8750	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP905	868.9500	YF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP906	866.0125	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP906	866.5125	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP906	867.0125	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP906	867.5125	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP906	868.0125	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP907	866.1750	GF
DUMFRIES	PRINCE WILLIAM, COUNTY OF	WPHP907	867.7250	GF
HILLSBORO	LOUDOUN, COUNTY OF	WIM234	488.6875	PP
HILLSBORO	LOUDOUN, COUNTY OF	WIM234	488.9375	PP
HILLSBORO	LOUDOUN, COUNTY OF	WIM234	489.1875	PP
LEESBURG	LOUDOUN, COUNTY OF	WIM234	488.6875	PP
LEESBURG	LOUDOUN, COUNTY OF	WIM234	488.9375	PP
LEESBURG	LOUDOUN, COUNTY OF	WIM234	489.1875	PP
STUART	PATRICK, COUNTY OF	WNIA928	151.1300	PL
STUART	PATRICK, COUNTY OF	WNIA928	154.6500	PL
STUART	PATRICK, COUNTY OF	WNIA928	155.8350	PL
STUART	PATRICK, COUNTY OF	WNIA928	158.9250	PL
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4500	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.4750	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7000	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.7250	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9625	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	866.9875	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	867.7875	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	867.9000	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.1750	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.3375	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6000	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.6250	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8500	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.8750	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP905	868.9500	YF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP906	866.0125	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP906	866.5125	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP906	867.0125	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP906	867.5125	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP906	868.0125	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP907	866.1750	GF
WOODBRIDGE	PRINCE WILLIAM, COUNTY OF	WPHP907	867.7250	GF
WYTHEVILLE	WYTHEVILLE, TOWN OF	WPHS425	150.7750	PM
WYTHEVILLE	WYTHEVILLE, TOWN OF	WPHS425	155.3850	PM

Vermont

City	Licensee	Callsign	Freq	Sr.
	COLCHESTER, TOWN OF	WPHQ580	453.2125	PL
	COLCHESTER, TOWN OF	WPHQ580	453.9625	PL
	COLCHESTER, TOWN OF	WPHQ580	460.5125	PL
	COLCHESTER, TOWN OF	WPHQ580	465.5125	PL
	READING, TOWN OF	WPHQ635	154.1150	PL
BRATTLEBOR	BRATTLEBORO, TOWN OF	KBW801	155.8800	PL
BRATTLEBOR	BRATTLEBORO, TOWN OF	KBW801	155.8950	PL
HARTLAND	HARTLAND, TOWN OF	KXZ746	39.1000	PL
ORLEANS	ORLEANS, VILLAGE OF	WPHR607	155.1450	PL
ORLEANS	ORLEANS, VILLAGE OF	WPHR607	158.8650	PL
READING	READING, TOWN OF	WPHQ635	154.1150	PL
SOUTH READ	READING, TOWN OF	WPHQ635	154.1150	PL
VERGENNES	VERGENNES UNION HIGH SCHOOL	WPHU359	155.2950	PS

Washington

City	Licensee	Callsign	Freq	Sr.
	ANACORTES, CITY OF	KON766	154.2650	PF
	ANACORTES, CITY OF	KON766	154.4300	PF
	DAYTON GENERAL HOSPI	KRZ650	155.2800	PS
	DAYTON GENERAL HOSPI	KRZ650	155.3400	PS
	DAYTON GENERAL HOSPITAL	WRZ650	155.2800	PS
	KING COUNTY FIRE PROTECTION DI	WPHS405	154.2500	PF
	KING, COUNTY OF	KBW835	154.0400	PL
	SNOHOMISH, COUNTY OF	WPHS322	453.1125	PL
	SNOHOMISH, COUNTY OF	WPHS322	458.1125	PL
	SPOKANE, COUNTY OF	WNST628	158.9100	PP
	STEVENS COUNTY FIRE DIST 4	WPHS320	154.0700	PF
ANACORTES	ANACORTES, CITY OF	KON766	154.2650	PF
ARIEL	WASHINGTON, STATE OF	WPHP895	868.0875	YF
ARIEL	WASHINGTON, STATE OF	WPHP895	868.9750	YF
BREMERTON	BREMERTON, CITY OF	KOL696	154.1450	PF
BREMERTON	BREMERTON, CITY OF	KOL696	154.3700	PF
BURLINGTON	PORT OF SKAGIT, COUNTY OF	WQI989	158.8950	PL
CARSON	SKAMANIA COUNTY FIRE DISTRICT	WPHV239	460.6250	PF
EASTSOUND	WASHINGTON, STATE OF	WNSX295	151.2350	PO
EASTSOUND	WASHINGTON, STATE OF	WNSX295	151.2650	PO
EASTSOUND	WASHINGTON, STATE OF	WNSX295	151.2950	PO
ELLENSBURG	KITTITAS COUNTY F P D 2	KOI782	154.2050	PF
ELLENSBURG	KITTITAS COUNTY F P D 2	KOI782	154.4300	PF
FIFE	FIFE, CITY OF	KQN951	45.6400	PL
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	866.0125	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	866.5125	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.0125	GF

City	Licensee	Callsign	Freq	Sr.
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.5125	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.5375	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.5625	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.5875	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.6125	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	867.6375	GF
GIG HARBOR	WASHINGTON, STATE OF	WPHY277	868.0125	GF
HOQUIAM	HOQUIAM, CITY OF	KNAB518	155.9400	PL
ISSAQUAH	KING, COUNTY OF	KBW835	154.0400	PL
ISSAQUAH	KING, COUNTY OF	WQI582	460.5250	PP
METALINE	SELKIRK SCHOOL DISTRICT 070	WPHN929	155.2800	PS
OROVILLE	OKANOGAN COUNTY F P D 1	KIA760	154.3550	PF
RICHLAND	RICHLAND, CITY OF	WPHW805	458.2750	PL
SEATTLE	KING, COUNTY OF	KBW835	154.0400	PL
SEATTLE	KING, COUNTY OF	WQI584	460.5250	PP
SEATTLE	SHORELINE WASTEWATER MANAGEMEN	WNDF860	155.7450	PL
SEATTLE	WASHINGTON, STATE OF	WNFK307	853.2626	GP
STEVENSON	SKAMANIA COUNTY FIRE DISTRICT	WPHV239	460.6250	PF
WASHOUGAL	SKAMANIA COUNTY FIRE DISTRICT	WPHV239	460.6250	PF
WASHOUGAL	SKAMANIA COUNTY FIRE DISTRICT	WPHV239	465.6250	PF
WENATCHEE	WASHINGTON, STATE OF	WPHP896	866.0375	YF
WENATCHEE	WASHINGTON, STATE OF	WPHP896	866.1375	YF
WENATCHEE	WASHINGTON, STATE OF	WPHP896	866.6375	YF
WENATCHEE	WASHINGTON, STATE OF	WPHP896	867.1375	YF
YAKIMA	WASHINGTON, STATE OF	WPHP897	866.0875	YF
YAKIMA	WASHINGTON, STATE OF	WPHP897	866.5375	YF
YAKIMA	WASHINGTON, STATE OF	WPHP897	867.1125	YF
YAKIMA	WASHINGTON, STATE OF	WPHP897	868.4125	YF

Wisconsin

City	Licensee	Callsign	Freq	Sr.
	BARRON MEMORIAL MEDICAL CENTER	KUJ675	155.2800	PS
	BARRON MEMORIAL MEDICAL CENTER	KUJ675	155.3400	PS
	RICHLAND CENTER, CITY OF	WPHS462	453.2750	PL
	SAINT MICHAELS HOSP OF STEVENS	KFT455	33.0400	PS
	TREMPEALEAU, COUNTY OF	WNSU519	154.0700	PF
	TREMPEALEAU, COUNTY OF	WNSU519	154.2950	PF
	TREMPEALEAU, COUNTY OF	WNSU519	154.4150	PF
	WASHBURN, COUNTY OF	KVN572	155.2800	PS
	WASHBURN, COUNTY OF	KVN572	155.3400	PS
ANTIGO	ANTIGO, CITY OF	WPHT672	154.4300	PF
BLOOMER	BLOOMER, CITY OF	WQH443	155.7900	PP
BOSCOBEL	BOSCOBEL, CITY OF	WNDH648	154.0550	PL
BOYCEVILLE	BOYCEVILLE, CITY OF	WRX674	154.1900	PF
CARLSVILLE	DOOR COUNTY MEMORIAL HOSPITAL	WNDF921	155.3400	PS
CLINTONVIL	WAUPACA COUNTY OF	WNTZ627	958.3500	PL
CLINTONVIL	WAUPACA, COUNTY OF	KSB424	155.2500	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	154.6500	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	155.3700	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	155.4150	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	155.4750	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	156.0300	PP
COLUMBUS	COLUMBUS, CITY OF	KAS656	159.1500	PP
DE PERE	WISCONSIN, STATE OF	WNVF925	854.4875	YP
DE PERE	WISCONSIN, STATE OF	WNVF925	855.4875	YP
DE PERE	WISCONSIN, STATE OF	WNVF925	856.4875	YP
DE PERE	WISCONSIN, STATE OF	WNVF925	857.4875	YP
DE PERE	WISCONSIN, STATE OF	WNVF925	859.4875	YP
DE PERE	WISCONSIN, STATE OF	WNVF925	860.4875	YP
DORCHESTER	GRACO INC	WNCD396	155.2350	PS
EAGLE	EAGLE, TOWNSHIP OF	WPHV939	153.9200	PL
EAGLE	EAGLE, TOWNSHIP OF	WPHV939	158.7450	PL
EAU CLAIRE	EAU CLAIRE, CITY OF	WQI960	154.9800	PL
EAU CLAIRE	EAU CLAIRE, CITY OF	WQI960	155.0250	PL
FALL CREEK	LINCOLN, TOWN OF	WNSW677	155.7150	PL
FORT ATKIN	FORT ATKINSON, CITY OF	WPHX964	453.4750	PL
FORT ATKIN	FORT ATKINSON, CITY OF	WPHX964	458.4750	PL
FORT ATKIN	LA VIGNE BUS CO INC	KYY574	155.2650	PS
FOX LAKE	WISCONSIN, STATE OF	WNVF925	854.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	855.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	856.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	857.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	858.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	859.4875	YP
FOX LAKE	WISCONSIN, STATE OF	WNVF925	860.4875	YP
FREMONT	WAUPACA COUNTY OF	WNTZ628	955.5500	PL
FRIENDSHIP	ADAMS, COUNTY OF	KDE281	159.0500	PH
FRIENDSHIP	ADAMS, COUNTY OF	KDE281	159.1050	PH
HUDSON	HUDSON, CITY OF	KVP671	153.9650	PL
HUDSON	HUDSON, CITY OF	KVP671	155.7450	PL
HUDSON	HUDSON, CITY OF	KVP671	155.9550	PL
JEFFERSON	JEFFERSON, COUNTY OF	WQB793	154.3700	PF
LA POINTE	LA POINTE, TOWN OF	WNUV942	453.3750	PL
LA POINTE	LA POINTE, TOWN OF	WNUV942	453.6750	PL
LA POINTE	LA POINTE, TOWN OF	WNUV942	458.3750	PL
LA POINTE	LA POINTE, TOWN OF	WNUV942	458.6750	PL
LADYSMITH	RUSK, COUNTY OF	KNAO343	154.2050	PF
LADYSMITH	RUSK, COUNTY OF	KNAO343	158.8950	PF
MARINETTE	BAY AREA MEDICAL CENTER	WPHC347	155.3400	PM
MARINETTE	WISCONSIN, STATE OF	KNFP312	151.2050	PO
MARINETTE	WISCONSIN, STATE OF	KNFP312	151.3100	PO
MARINETTE	WISCONSIN, STATE OF	KNFP312	151.3550	PO
MERRILL	MERRILL, CITY OF	KTK554	155.0700	PP
MERRILL	MERRILL, CITY OF	KTK554	155.3700	PP
MERRILL	MERRILL, CITY OF	KTK554	155.6400	PP
MERRILL	MERRILL, CITY OF	WPHV680	158.7600	PL
MONTICELLO	MONTICELLO, CITY OF	KXZ351	154.1600	PF
OSHKOSH	GOLD CROSS AMBULANCE SERVICE I	WNYU316	452.3500	PS
OSHKOSH	GOLD CROSS AMBULANCE SERVICE I	WNYU316	457.3500	PS
OSHKOSH	WISCONSIN, STATE OF	WNVF925	854.4875	YP
OSHKOSH	WISCONSIN, STATE OF	WNVF925	855.4875	YP
OSHKOSH	WISCONSIN, STATE OF	WNVF925	857.4875	YP
OSHKOSH	WISCONSIN, STATE OF	WNVF925	860.4875	YP
PARK FALLS	WISCONSIN, STATE OF	KBO23	151.2050	PO
PARK FALLS	WISCONSIN, STATE OF	KBO23	151.3100	PO
PARK FALLS	WISCONSIN, STATE OF	KBO23	151.3550	PO
PORTAGE	WISCONSIN, STATE OF	WNVF925	854.4875	YP
PORTAGE	WISCONSIN, STATE OF	WNVF925	855.4875	YP
PORTAGE	WISCONSIN, STATE OF	WNVF925	856.4875	YP
PORTAGE	WISCONSIN, STATE OF	WNVF925	857.4875	YP
PORTAGE	WISCONSIN, STATE OF	WNVF925	858.4875	YP
PORTAGE	WISCONSIN, STATE OF	WNVF925	860.4875	YP
SCANDINAVI	WAUPACA COUNTY OF	WNTZ626	955.1500	PL
SHELDON	RUSK, COUNTY OF	KNAO343	154.2050	PF
SHERWOOD	GOLD CROSS AMBULANCE SERVICE I	WNYU316	452.3500	PS
SPARTA	SPARTA CITY OF	WNTZ636	956.3437	IW
STURTEVANT	WISCONSIN, STATE OF	WNVF925	854.4875	YP
STURTEVANT	WISCONSIN, STATE OF	WNVF925	855.4875	YP
STURTEVANT	WISCONSIN, STATE OF	WNVF925	857.4875	YP
STURTEVANT	WISCONSIN, STATE OF	WNVF925	859.4875	YP
STURTEVANT	WISCONSIN, STATE OF	WNVF925	860.4875	YP
SYMCO	WAUPACA COUNTY OF	WNTZ629	933.1750	PL
TWO RIVERS	TWO RIVERS, CITY OF	KNHT823	153.9500	PF
TWO RIVERS	TWO RIVERS, CITY OF	KNHT823	154.3850	PF
WAUKESHA	WAUKESHA, CITY OF	WPHW597	153.7850	PL
WAUKESHA	WAUKESHA, CITY OF	WPHW597	154.0400	PL
WAUPACA	WAUPACA COUNTY OF	WNTZ630	942.1750	PL
WAUPACA	WAUPACA COUNTY OF	WNTZ630	958.7500	PL
WAUPACA	WAUPACA, COUNTY OF	KSB424	154.7250	PP
WAUPACA	WAUPACA, COUNTY OF	KSB424	154.7700	PP
WAUPACA	WAUPACA, COUNTY OF	KSB424	154.8600	PP
WAUPACA	WAUPACA, COUNTY OF	KSB424	155.2500	PP
WAUPACA	WAUPACA, COUNTY OF	KSB424	155.9100	PP
WAUPUN	WISCONSIN, STATE OF	WNVF925	854.4875	YP
WAUPUN	WISCONSIN, STATE OF	WNVF925	855.4875	YP
WAUPUN	WISCONSIN, STATE OF	WNVF925	856.4875	YP
WAUPUN	WISCONSIN, STATE OF	WNVF925	857.4875	YP
WAUPUN	WISCONSIN, STATE OF	WNVF925	859.4875	YP
WAUPUN	WISCONSIN, STATE OF	WNVF925	860.4875	YP
WAUSAUKEE	WISCONSIN, STATE OF	WBJ874	151.1450	PO
WAUSAUKEE	WISCONSIN, STATE OF	WBJ874	151.2050	PO
WAUSAUKEE	WISCONSIN, STATE OF	WBJ874	151.3100	PO
WHEELER	OTTER CREEK, TOWN OF	WPHW598	154.0550	PL
WHITEWATER	WHITEWATER, TOWN OF	WQI999	33.0200	PH
WINTER	WISCONSIN, STATE OF	WRU886	151.3550	PO

West Virginia

City	Licensee	Callsign	Freq	Sr.
CHARLESTON	KANAWHA, COUNTY OF	WNDC564	453.5500	PP
CRAIGSVILL	CBC VOLUNTEER FIRE DEPARTMENT	WPHT720	33.5200	PF
CRAIGSVILL	CBC VOLUNTEER FIRE DEPARTMENT	WPHT720	33.5600	PF
ELMIRA	SOUTHERN EMERGENCY MEDICAL SER	WPHT576	72.0400	PM
SNOWSHOE	SOUTHERN EMERGENCY MEDICAL SER	WNVL600	155.4000	PM
SNOWSHOE	SOUTHERN EMERGENCY MEDICAL SER	WPHT576	72.0400	PM
WESTOVER	WEST VIRGINIA, STATE OF	KQM60	72.9600	PP

Wyoming

City	Licensee	Callsign	Freq	Sr.
	GOSHEN, COUNTY OF	WNDA553	156.1800	PH
	GOSHEN, COUNTY OF	WNDA553	159.1050	PH
	PARK COUNTY SCHOOL DISTRICT 1	WQC694	155.1750	PS
	WESTON, COUNTY OF	WSL561	154.7400	PP
	WESTON, COUNTY OF	WSL561	154.8000	PP
	WESTON, COUNTY OF	WSL561	155.7000	PP
GLENROCK	GLENROCK, CITY OF	KFJ246	154.3400	PF
LANDER	FREMONT COUNTY EMERGENCY MEDIC	WPHU787	155.3550	PM
LARAMIE	LARAMIE, CITY OF	WPCI938	153.8300	PF
LARAMIE	LARAMIE, CITY OF	WPCI938	154.4300	PF
RIVERTON	FREMONT COUNTY EMERGENCY MEDIC	WPHU787	155.3550	PM
SUNDANCE	SUNDANCE, TOWN OF	WNDE733	155.9250	PL

PRODUCT REVIEW

Radio Shack PRO-60

This month we do a quick review of one of Radio Shack's newer handheld scanners, the model PRO-60 (cat. no. 20-309). Radio Shack's line has been a confused mess for the last three or four months. Two new handheld models were introduced and neither one was in any of their catalogs or fliers. We made inquiries at a number of Shack stores and couldn't get a straight answer on which model was what. We even called Radio Shack directly and couldn't find out the story. (You've got questions - they've got answers?)

Well, it turns out that the PRO-60 is the second from the top-of-the-line model. This we found out after we ordered the PRO-60 for review! The new PRO-26 is their top-line handheld and both models are advertised in their just-released 1996 catalog.

The PRO-60 has 200 channels, arranged in ten banks of twenty channels each. Just the right size! It has many of the same features we have become used to in General Research and Electronics (GRE) manufactured radios: Direct Search from any manual channel; monitor channels for temporary storage of frequencies found during search; programmable Priority channel; and so on. The scanner has "continuous coverage," meaning that it will tune from 30 to 512MHz, then from 760 to 1000MHz, skipping the Cellular Radiotelephone channels at 824 to 849 and 869 to 894MHz. You'll note that coverage includes the 225 to 400MHz band, the first to do so since the PRO-43.

The radio scans super fast; 25 channels a second. In the Search mode, it is supposed to increment at 50 steps a second. However, the search increments are not selectable. It is extremely light, only a little over a half pound without the batteries. The belt clip on the back of the radio is plastic, but appears sturdy. Like all Radio Shack scanners, the Volume and Squelch controls are "backwards," meaning that they face away from you when holding the radio. They are configured for use when the radio is clipped to your belt and operated while looking down at it. Convenient, if that's what you happen to do often; a pain in the rear when it's sitting in your car console or being held in front of you while viewing the display.

A recessed slide switch disables all keyboard functions except the Manual and Scan buttons. A "beep" tone confirms key contact. The Light button turns on the display illumination (two LED's) for about five seconds. It will stay on if you continue to press keys. The display itself is kind of small, but legible.

A neat feature is the Battery Saver. When you are in the Manual mode and no signal is received or key input made for five seconds, the scanner goes into a "rest" mode, consuming only 40% of the normal power. Most of the radio (except the CPU and audio circuits) is turned off for about a second, then switched on for about a half a second at a time to check for a signal.

The instruction manual is clear and easy to read and understand. As usual with Radio Shack scanners, you get nothing with your radio but an antenna. No batteries, no earphone, no anything. Heck, you're lucky they give you a box to take it home in. When you do your price comparisons, remember to add in the cost of NiCads for your Radio Shack.

Operationally Speaking

Each of the ten scan banks are selected or deselected by merely pressing the appropriate numeral key while the radio is scanning. Pressing the Two key, for example, locks Bank Two into the scan cycle. Pressing it again locks it out.

The Search mode is kind of hard to operate with the PRO-60. If you wish, you may enter (or recall) one of the limits and then manually step from this frequency by pressing the Up or Down keys repeatedly. To start the radio Searching you press and hold the arrow key. This leads to slight problems when using the Search mode as one normally would. If the radio stops on an undesired frequency, you have to press the arrow key repeatedly to get the scanner to move on. It all depends on whether a signal is still being received when you press the arrow key or not, but most times you have to press the arrow key once to move off the active channel, once more if the signal is very strong and "bleeds over" to the next frequency, then once again, holding it, to resume searching. It's a real pain. There is only one set of programmable search limits.

The search steps are 5, 12.5 and 25kHz, depending on band, and are NON-SELECTABLE. This is about the only major drawback with the PRO-60. I ALWAYS keep one of the search banks in my old AOR 900 programmed with the band from 460.6625 to 469.9875, in 25kHz steps. This allows me to find almost any handheld two-way radio I spot in a minimum of time, since I can search between the normal, 25kHz-spaced repeaters in the UHF band. You can't do this with the PRO-60. You can only search the 460MHz band in 12.5kHz steps. Its super-fast search speed doesn't do you a lot of good if the radio stops on every repeater in the county! Thankfully, this isn't that much of a problem on weekends. And you can always remove the antenna, which limits your range to the immediate vicinity.

In the VHF aircraft band, the radio searches in 25kHz steps, which is handy. But in the 225 - 400MHz military aircraft band, it's 12.5kHz steps. Why on earth they didn't make this 25kHz is beyond me. Note that this means that the search rate of 50 steps a second is effectively cut in half, since normal channel allocations in this band are 25kHz.

The keypad "beep" tone is not inordinately loud but, unfortunately, is not

adjustable with the volume control and can't be turned off. Not too cool in the mall.

Technically Speaking

The receiver uses one of five R.F. bandpass filters, which then feed the direct-coupled, two-stage R.F. amplifier. This is followed by a double-balanced mixer. There are two first oscillators (VCO's), one for the lower frequencies and one for the 800MHz range. The First I.F. is variable, 608 to 611MHz, using a one-stage amplifier with a stagger-tuned output circuit. The design is typically GRE. What the radio lacks in sensitivity, it makes up for in its relative freedom from intermodulation interference.

Rated sensitivity is only 1 microvolt, not exactly great. Our measured sensitivity is shown in the accompanying graph. Audio output is only 180 milliwatts and the speaker is only 1 3/8th inches in diameter. But the frequency response is evidently tailored so that the audio quality is surprisingly acceptableable. It won't exactly drive you out of your car, however, and in most instances an external speaker (possible even an amplified speaker) is needed (There's no dropping resistor in series with the earphone jack). Considerable distortion results if the volume is turned above midrange.

The radio is made up of three P.C. boards; an R.F board, an audio board and the logic board, which includes the keyboard. For reasons we just can't fathom, GRE continues to use a BNC-type antenna connector with a forked center contact. After use, the contact tends to spread until a point is reached when the center contact of the antenna connector no longer makes positive contact. It can be repaired easily with the use of a pick or scribe, gently pushing the halves of the "fork" back together. But the question arises as to why the Japanese manufacturers continue to use this configuration. Bear in mind that the antenna connector on a handheld unit will probably be subject to lots of use. If it is used in a vehicle with an external antenna, you will probably switch antennas quite often. If you acquire a PRO-60, the first thing you will want to do is to replace the antenna connector with one of a more substantial design. Otherwise, the physical construction of the unit is very good.

One good move was to include two power jacks, one for powering the radio from an external power supply and another to charge the batteries (if you are using rechargeable, NiCad batteries). This is handy, since many radios will only provide one jack, usually just for recharging the batteries. This leaves you with no way to operate the radio once the batteries are nearly dead.

Remember that the power jacks on Radio Shack scanners have a negative center conductor (unlike the rest of the world). But don't worry, they sell an optional AC power supply, and an optional DC auto power cord, and an optional earphone, and optional NiCad batteries, and an optional external speaker. Are you seeing a trend here?

The rubber duck antenna supplied with the PRO-60 is better than most. We compared it with a number of other antennas and it performs very well in all bands.

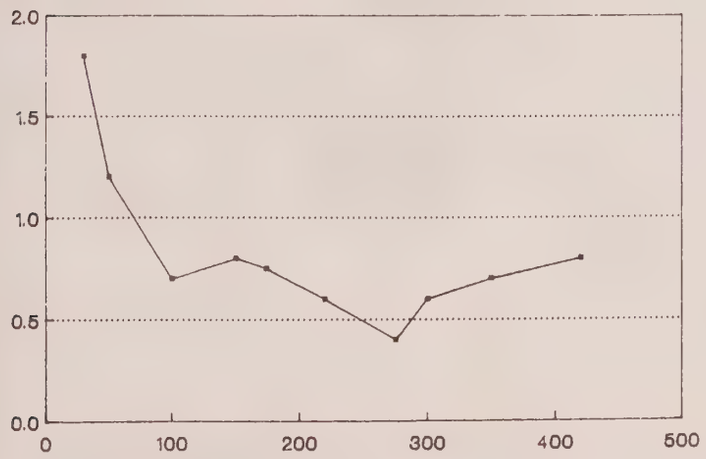
For "Mod" Enthusiasts

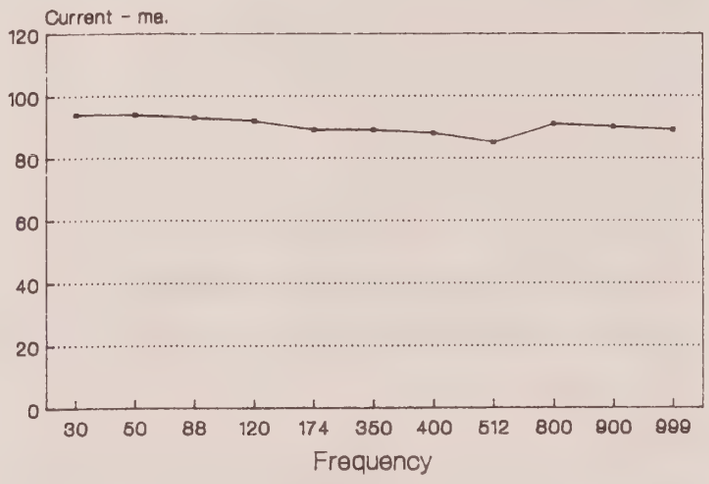
IC301, the NFM/AM IF amp and detector I.C., has a Signal Strength output, which would be handy for an S-meter, although I have no idea why anyone would want an S-meter on a handheld scanner. In the PRO-60, this signal is wisely used as the Automatic Gain Control.

The Zeromatic function causes the radio to change up or down in frequency during search to zero in on the exact frequency (hopefully). For some of us, it just gets in the way. To disable it, remove or break R334 on the Audio board. The Audio board is the one in the middle. The Logic board is the one behind the front panel.

To disable the "beep" tone, either cut pin 6 of CN302 or remove C356 on the Audio board. Of course, if you are adept you can always increase the value of R358, or lower R357, to decrease the volume of the beep. These components are located on the back of the board, near the corner, by the logo.

The Power Save function is neat, but if I'm sitting next to some green box by the side of the road waiting for a signal that is only transmitted once an hour, I don't want my radio going into a "rest" mode while I'm monitoring. To disable





the Power Save, lift pin 5 of IC309 and install a jumper wire from it to pin 8. This will require some skill. IC309 is located half way between the 34.3MHz crystal and the edge of the board.

In Summary

All in all, the PRO-60 is a pretty decent little radio. Again, it is a step down from Radio Shack's PRO-26, their new top-of-the-line model. The PRO-60 retails for $379.99 and goes for about $260 from the discounters. Assuming that you'll pay something in that neighborhood for it, we rate it Two and Three-Quarter Stars, since it has a very good complement of features and fair performance, at a reasonable price.

What do you pass up if you buy the PRO-60 over the PRO-26? A whole load of features, plus better performance. Like the PRO-60, the 26 has 200 channels, but also a Search and Store feature and an automatic birdie lock-out. The PRO-26 receives to 1300MHz and has a rated sensitivity of around .6 microvolts in the VHF and UHF bands and .8 microvolts at 800MHz. Like the PRO-60, it has selectable emission modes but adds selectable frequency-search steps (5, 12.5 and 25kHz). It scans twice as fast! And if you search in 5kHz steps, it will search at 300 steps per second!!

It also has a number of neat memory management functions, including Auto Sort and a programmable (by channel) R.F. attenuator. Plus other minor features: two or four second scan delay; a Data Skip function which they claim will skip over trunked system control channels; AND you can turn the "beep" tone off!

The PRO-26 retails for $449.99, though. A tough choice, isn't it?

USSN

When seconds count, *REACT*. needs you...

...to summon help for an injured motorists, an elderly woman trapped in a fire, a trucker stranded in a blizzard, a drowning child!

As a REACT volunteer CB radio monitor you may be the only communications life-line for someone in serious trouble. You relay messages from those desperate for help to police or other emergency services.

Your REACT Team will also use CB and other radio services to provide safety communications for events like parades, marathons and even balloon races. The fellowship with other REACT members at Team meetings and annual conventions is an added bonus.

Volunteer. Join Today!

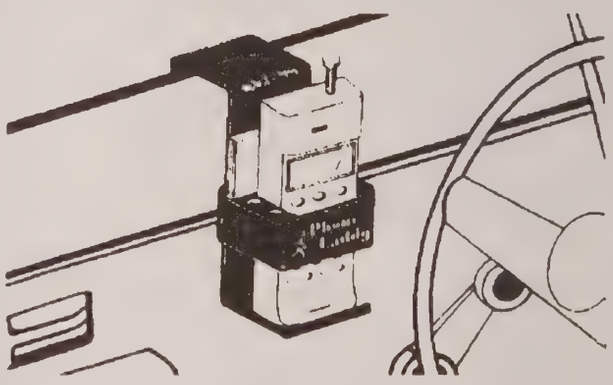
Add a New, Exciting Challenge to Your Life. Help Save Lives and Property!

***REACT*. International, Inc.**
Tel (316) 263-2100
FAX (316) 263-2118
P.O. Box 998, Wichita, KS 67201

REACT.

PHONE CADDY

The Phone Caddy will hold almost any handheld scanner or radio. Comes with note pad and indexed booklet to write frequencies in. Compartment behind radio holds note pad and two pencils. 2 13/16 across by 1 11/16 deep. $9.95 + $3.00 S&H. Send check or money order or call 1–800–890–6999 with MC VISA or Discover.



U.S. Scanner Publications, PO Box 14923, Portland, OR 97214, 1–800–890–6999

AOR AR-8000

by R.L. Gehri

Expert Mode & Speed

The AR-8000 is the biggest news to hit the scanner scene in '95. There has never been a scanner that allowed the scanner hobbyist to control so many functions, it is likely that most owners of don't know what can be accomplished with their AR-8000.

A large percentage of AR-8000 owners use the "NEWUSER" mode and never explore the many advanced features of this scanner—for that matter, how many scanners have you heard of that have a "NEWUSER" mode as well as an "EXPERT" mode? The newuser mode makes the scanner relatively easy to use for first-time users, but it is not as easy as a Bearcat and it is a lot easier then using most other AOR scanners.

It is recommended that you start your AR-8000 experience in the newuser mode, which is the way it comes from the factory, and then after familiarizing yourself with its operations, change over to the expert mode. This can be accomplished by pressing the "FUNC" key on the left side of the AR-8000 then the "CONF" key located on the lower right hand side of the keyboard above the "ENTER" key—it is also marked "LOCAL." Now use the down arrow key, located on the lower left corner of the keyboard, to move the cursor down to where it says newuser on the display, rotate the "TUNING" knob on the top of the radio so that the display says expert, then press enter.

There are several added feature that can be accessed in the expert mode that can not be used in the newuser mode. For example, if you wish to use the AR-8000 with a computer, you will need to be in the expert mode. How about searching 167.000 to 167.995 in 12.5kHz steps to find the local FBI repeaters and having the radio automatically store them into memory channels? (See Page 95 in the owner's manual for a description of the AUTO STORE function). If you wish to key in your own step rates in the search mode, it requires the expert mode.

For a detailed description of the scan options that can be set in the expert mode see Page 65 (section 10-12) in the owners manual. For the search function see Page 85 (section 13-6). It is well worth your time to read these sections of the manual and play with the options. They can be vary useful. Keep in mind, you can always set the scanner back to newuser.

Increasing Speed

There are two ways to increase the speed of the AR-8000. The first is to be accurate and neat when entering your frequency information. Getting into the habit of entering frequencies in assenting or descending frequency order is a good thing. Sort your frequencies before entering them so they are in numerical order. The reason for doing this is to make it easier for the Voltage Controlled Oscillator (VCO) to change frequencies. The VCO is what tunes the receiver to a frequency while the processor chances the applied voltage to the VCO while it in turn changes its output frequency. In the micro world of the processor this takes "forever" to happen. While in our world it happens in microseconds. Keep in mind greater the jump in frequency the longer it takes to get there. When you keep your frequencies in order the processor needs less time to shift the VCO. This is how Bearcat gets their Turbo-Scan speed; the processor sorts the frequencies into numerical order before it starts scanning. It is Interesting to note that Radio Shack's top line scanners, those made by GRE, are not affected by this technique, so it makes no difference what order you put the frequencies in, the speed remains the same.

The second way to change the speed is to change the squelch detect-time. This is the time that the scanner will stop on a frequency and look for a signal before it continues on. The AR-8000 is the only scanner that will allow you to make this adjustment through the keyboard. This and other special functions are outlined on Page 99 of the owners manual.

To reset the squelch detect time, turn the AR-8000 off, press and hold the "FUNC" button plus the "2" key while turning the power on. Keep holding the keys in while the radio goes trough its startup routine. After it says "Welcome To The World Of AR-8000 Receiver," the display will change to the "Set Time Sq Detect" screen. To change the value simply rotate the tuning knob, the lower the number the faster the speed will be.

DON'T GET CARRIED AWAY! If you shorten this time by too much, the scanner will start skipping signals. According to the manual, the default is 80 milliseconds, however, mine was set at 30 from the factory. I am using a setting of 10 and it seems to work well, and has increased my scan speed by ten channels per second.

I also reset the Lock Detect to two milliseconds. This is the time it takes for the VCO to travel from one frequency to another and the Phase Lock Loop (PLL) to "lock" on to a new frequency. It was set at five milliseconds from the factory and has a range of zero to 49 milliseconds. Remember, do not get carried away with this function, it can cause difficulties with the processor. If you get a PLL-ERROR message, move the setting up one millisecond at a time until the message goes away. I reset mine to two milliseconds and have had no difficulties with the PLL.

Next month we will dive into the band plan of the AR-8000 and show you what is wrong with it and how to fix it. It does need fixing. Until then, happy scanning.

USSN

FCC NEWS

The FCC has released a Further Notice of Proposed Rulemaking dealing with the licensing in the Specialized Mobile Radio Service (SMRS) at 900MHz. The 896 to 901 and 935 to 940 MHz band was allocated in 1986 and licensing in the top 50 urban areas of the country began in 1987. It was completed in 1992. In 1993 the Commmission released its proposal dealing with licensing in the remainder of the country but changed its mind in 1994 when Congress granted them the authority to issue licenses using competitive bidding, or spectrum auctions. Since SMR's offer communications service for a profit, they fall into the new Commericial Mobile Radio Service (CMRS) and are subject to the auction process whenever there is more than one application for a frequency.

The Commission is now proposing to use the auction process to grant licenses on the SMRS channels in the 935 to 940MHz band. They have already decided that the frequencies will be licensed in ten 20-channel blocks. A license will be good for one of the 51 Rand-McNally Basic Trading Areas, some of which cover entire states. The problem is that existing licensees are operating on channels in metropolitan areas within regions. Any new grantee will be required to protect these licensees from interference, meaning that they will not be able to construct a repeater within 70 miles of an existing station, in most cases.

The rest of the Notice lays out the details and procedures for the auctions to be held for the new licenses. Essentially, they are the same as those for the Personal Communications Service (PCS) auctions—the requirement for an upfront payment before bidding starts, preferences for women- and minority-owned businesses, rules against collusion and so forth.

This proposal follows by a few months the Notice of Proposed Rule Making released last fall that will amend the licensing procedure for SMRS channels in the 851 to 866MHz band, as well. This proposal was based on the fact that the determination was made in the CMRS proceedings that modern SMRS systems are, more and more, using higher-capacity digital techniques with lower power transmitter sites arranged in a cellular-like configuration, covering large state- or region-wide areas. They stated that they are becoming more like Cellular and other communications providers. And because of the decisions made in the CMRS proceedings, they should be treated like common carriers as well. By the same token, the rules regulating SMRS would have to be changed to make it easier for SMR's to configure their systems to be more "cellular-like"! The FCC's existing rules were not designed for the licensing of high-capacity, wide-area, multi-mode communications systems, just local-area, two-way dispatch systems.

Thus the FCC proposed changing their 800 MHz SMR rules to make it easier to accommodate such systems. The possible changes include reconfiguring the existing 851 to 866MHz channels into channel blocks granted to single licensees, allowing extended constuction periods, permitting any number of transmitters within a licensees service area without specific authorization, all while still providing for local-area systems.

Interesting item of the month:

Rangemaster Golf Enterprises, dba ProShot Golf, requested waivers of certain FCC rules to obtain permanent licenses for its local area position-determination system at La Quinta, California. Rangemaster also asked for a blanket waiver for future license applications for its system at other locations.

Rangemaster has been operating its system at a La Quinta golf course under developmental authority. The system provides golfers with location information on the course. It determines location from the phase relationships among signals received at a golf cart from multiple (four to six) fixed, low-power transmitters. The transmissions utilize a constant carrier with an effective bandwidth of approximately 70Hz. Each transmitter produces two-watts output power on frequencies offset between existing Business Radio Service channels between 28 and 50MHz. According to Rangemaster, it has neither detected nor been informed of any interference from the system.

Rangemaster also stated that there is a viable market for its position-locating technology in scientific and surveying applications. Applications for the mapping of radioactive surface contamination for precise location, identification and removal of contaminated material and the precision mapping of artifacts at archaeological excavation sites are also being evaluated and tested.

They sought waivers of various rule sections that will permit permanent licensing of their system. These include the use of offset channels in VHF Low band, the transmisison of continuous, unmodulated carriers and waiver of the station identification requirements.

The FCC noted that Rangemasters system utilizes very low transmitter power and low antenna heights. The transmitted signal has an extremely narrow bandwidth that can be transmitted on frequencies centered between channels in the Business Radio Service without causing interference to other users. Operation of the system relies upon continuous transmissions for location-determining purposes. Station identification is impractical because an unmodulated signal contains no information. The FCC granted the waiver, noting that good cause exists to waive their rules to permit continued operation of the system at La Quinta in the Business Radio Service, using up to six offset channels at 29.7 to 50MHz, provided that it causes no interference to other stations licensed for operation in this band. Rangemaster has shown that unique circumstances are involved in this particular case and that no reasonable alternative solutions exist within the rules. It has demonstrated through use of developmental licenses that its system is viable and that it does not cause harmful interference at La Quinta.

The FCC denied Rangemasters request for a blanket waiver, however, declaring that this goes beyond the scope of the waiver process and that a rule-making proceeding would have to be initiated to implement rules to accommodate their system nationwide, as they envision.

USSN

USSN Reprints

Reprints are made from the best available copy. They are made on a photocopy machine and folded into 8.5"X11" format. Check the box in front of the issues you would like to order and send to address below with payment or call your order in with a credit card. $2.50 per Issue.

1988 Volume One (10 Issues)

- ❒ Jan/Feb–P/R Realistic PRO 2004
- ❒ Mar–Cell Phone Freq. Layout–Pro 2004 Mods–Police Band Allocations
- ❒ Apr–P/R Radio Shack Discone–Amateur Radio Bandplan–P/R Bearcat BC 600XLT–Fire Band Allocations
- ❒ May–FBI–Blue Angels–P/R Regency TS 800 Model 2
- ❒ Jun–Military Airlift Command–Electronic Comm. Privacy Act–Alloca tions: 30.000 MHz to 30.980MHz, 150.010MHz to 150.995 MHz, 406.125MHz to 406.975 MHz
- ❒ Jul/Aug–Aircraft At Forest Fires–800 MHz Trunking–Allocations: 31.000 MHz to 31.980 MHz, 151.010 MHz to151.985 MHz, 407.000MHz to 407.975 MHz
- ❒ Sep–P/R Bearcat/Uniden BC205XLT–P/R Bearcat/Uniden BC200XLT–Riding The Rails, RR Frequencies–Allocations: 152.0075 MHz to 154.995 MH
- ❒ Oct–MARS Military Affiliate Radio System–P/R GRE Super Converter–BC200/205XLT Cell Mods–McChord AFB–800MHz–Allocations: 155.010 MHz to157.980 MHz
- ❒ Nov–P/R Realistic PRO 34–Realistic PRO 34 Cell Mods–Cell Phone Monitoring–GRE Mods
- ❒ Dec–P/R AR3000–P/R AR880–P/R Antenna Specialties MON 52 Antenna–Allocations: 158.010 MHz to 158.985MHz

1989 Volume Two (12 Issues)

- ❒ Jan–P/R Larsen Dual Band Antennas–P/R Cobra SR 925
- ❒ Feb–G.M.R.S.–Air Refueling–Allocations: 159.000 MHz to 159.990MHz
- ❒ Mar–Pro 2004 MODS–Aerial Demonstration Teams–Monitoring The Goodyear Blimps–Allocations: 160.005 MHz to160.9950 MHz
- ❒ Apr–A Look At The Spectrum–Aerial Demonstration Teams–BC-200XLT Again (Sep 88 Reprint)
- ❒ May–FAA –P/R Realistic PRO 2005–P/R AOR AR900–P/R GW 1 Pre-Amp–BC200/205XLT Cell Mods–Aerial Dem onstration Teams
- ❒ Jun–Aircraft Communications–Aircraft Allocations Table–BC 200XLT Update–Meteor Burst Communica tions–Aerial Demonstration Teams
- ❒ Jul–Aeronautical Enroute–P/R Lapel Mike–Forestry Conservation–US Forest Service–AOR vs Uniden–Aerial Demonstration Teams–Allocations: 161.010 MHz to 162.000 MHz
- ❒ Aug–TV Sound–Aircraft Enroute Frequencies–Aircraft Ground Control–Aerial Demonstration Teams
- ❒ Sep–Aircraft Telephone–Aircradt Flight Test Frequen cies–Telecommunications Act Of 1989–Aerial Demon stration Teams
- ❒ Oct–Coax And Your Scanner–BC 200XLT Update–Hot Times On The Police Band–The Communications Act Of 1934–AWOS Automated Weather Observation System– Additional Aircraft Information–AMSAT–Power Radio Service
- ❒ Nov–P/R AOR 950–P/R GRE Super Converter II–Monitor ing Repeater Inputs–Allocation Table–RF Connectors–Portable Antennas
- ❒ Dec–P/R Search and Store Module Model SS 45 For PRO 2004, 2005–BC 200XLT Final Chapter–Cellular Informa tion–DXing Low Band–Portable Antennas–1989 Index

1990 Volume Three (12 Issues)

- ❒ Jan–P/R PS 90 Search and Store Module For PRO 2004, 2005–Highway Maintenance (National Band Plan and Freq. Code)–SF Quake of 89–Scanner Boredom
- ❒ Feb–Refueling Frequencies–P/R Super Amplifier–Turbo Scan 800 TS 2 Power Fix
- ❒ Mar–P/R RAC Frequency Log Program–Allocations 162.000 MHz to 173.39625 MHz
- ❒ Apr–P/R Leisure Electronics DSS 8 Digital Scrambler Silencer–Mobile Data Terminals–P/R Regency INF 7 Scanner–Telephone Maintenance Radio Service–Nicad Battery Test Jig
- ❒ May–P/R Regency Informant Series–Do It Yourself Glass Mount Antenna–FBI Profile Pt 1–Airshows
- ❒ Jun–P/R Radio Shack PRO 2022–FBI Profile Pt 2–Forest Products Radio Service–P/R Scan Manager Software
- ❒ Jul–Aircraft Communication–Drive Up Windows–P/R PRO 2006–P/R Max 800 Antenna–Allocations 450.010 MHz to 450.990 MHz
- ❒ Aug–Pilot To Metro And WX Radar Facilities–Airshow–FBI Profile Pt 3–Allocation Table
- ❒ Sep–Cher Concert–P/R Discone Antennas–P/R Realistic PRO 36–Allocations 453.000 MHz to 453.975MHz
- ❒ Oct–P/R MON 58 Antenna–A Look Inside Your Antenna–800 MHz Aircraft Mobile Phone–P/R AR 2515
- ❒ Nov–Alcahol Tobaco Firearms ATF–P/R AR 1000–Motor Carrier Radio Service
- ❒ Dec–Aftermarket Products For Portable Scanners–Allocations 454.000 MHz to 454.975 MHz

1991 Volume Four (12 Issues)

- ❒ Jan–Optoelectronics Frequency Counters–Antennas And Coax–Intoduction to 800 MHz
- ❒ Feb–Frequency Counters–Simple Mobile Charger/Power Cord–P/R AR 3000–800 MHz Private Land Mobile Ser vice–Intelligence Codes/Phrases/Etc–Scanner Repeater Mod
- ❒ Mar–Future Of Scanning–P/R Radio Shack All Band Mobile Antenna–800 MHz Private Land Mobile Services–Pro 2004 Display Problem–Monitoring The Blue Angels
- ❒ Apr–PRO 2004 Display Backlight Fix–FCC Notice Of Inquiry–800 MHz Private Land Mobile Services–Trunked Systems–Public Safety Bands

❒ May–PRO 2022 800 MHz MOD–P/R GRE Superconverter 9001–Amateur Radio And Scanning–Automated Mari time Telecommunications Systems–The Manufaturers Radio Service
❒ Jun–P/R Icom IC 24AT–929 MHz Paging–P/R GRE 3001 Super Amplifier–Military Radio Systems–P/R Trident Highway Information Scanner
❒ Jul–Icom IC 24AT Pt 2–P/R Alinco DJ 560T–Marine Radio Monitoring–200 MHz Band–P/R Startek Frequency Counters
❒ Aug–800Mhz–VHF, UHF Ducting Effect–P/R AR 2500 with software–P/R Lakeview d 16 Discone
❒ Sep–FCC Authorization Act of 1991–1991 Index–Club Direc.
❒ Oct–P/R AOR AR 2800–Everything You Ever Wanted To Know About GMRS
❒ Nov–Canadian Scanner Frequencies–Kansas 800MHz Plan–Club Directory
❒ Dec–Frequency Counters–P/R Radio Shack HTX 202–Aircraft Carrier Landings–1991 Index

1992 Volume Five (8 Issues)

❒ Jan–Traveling With Your Radio–P/R PRO 37–Allocation Table
❒ Feb–New Jersey Scanner Law Reform–P/R Shinwa SR001 Scanning Receiver–Cell Phone Frequency Plan–P/R ACE GW 2 Wide Band Amplifier
❒ Mar–P/R Icom R 1–Frequency Counters–Cellular Chan nel Plans
❒ Apr–P/R Ventenna Model VT 15S–Auto Racing–P/R Icom R 100–Public Safety Log Sheet–P/R Alinco DJ 580L
❒ May–Speed Traps–Federal Aviation Administration FAA–Aircraft Allocation Table–Military Airlift Command MAC–US Forest Service–Legalities Of Monitoring
❒ Jun/Jul–Amateur Radio In Space–NASA Frequencies–Nickel Hydride Rechargeables–Aeronautical Enroute Frquencies–Guide To AOR AR1000–GMRS–Frequency Search Table
❒ Aug/Sep–P/R Radio Shack PRO 43–VHF Aircraft Allocations
❒ Oct/Nov–P/R Startek Frequency Counter BG 15–Catalog Sources–Flight Monitoring–Clubs and Publications Direc.

1993 Volume Six (2 Issues)

❒ Dec 92/Jan93–Monitoring The Shortwave Band–ATIS Operation
❒ Feb/Mar–Government Trunking Frequencies–Military Aircraft On Your Wideband Scanner–Aicraft Cockpit During Climb Out–Airshow Frequencies

1994 Volume Seven (4 Issues)

❒ Sep–The Rat Patrol Police Direction Finding Catches Bank Robbers–Sleuthing Private Detective Agencies With National Frequency Listing–Antenna Gain And Directionality–Trunking And Encryption Systems How To Listen In–Para chute Jumping and Sky Diving–Jump Zones And Frequen cies–Direct Satellite Scanning–Scanner DX-Introduction To Scanning
❒ Oct–Ground Plane Antennas–P/R Optoelectronics R10 Interceptor–Automated Surface Observing System With National List–Trunking and Search Steps–Air to Air Refueling With National Map and Frequencies Book Review: Beyond Police Call–Astronaut Hams
❒ Nov–How The Signal Gets To Your Antenna–P/R Radio Shack PRO 2035-Motorola Coverage PLUS-Med Net Channels-P/R BC 200XLT–House Bill HR4922 Interception Of Digital and Other Communications–Air Traffic Control Centers With Maps–137 MHz Satellite Band–Oil Spill Clean Up Frequencies
❒ Dec–Civil Air Patrol–Halfwave Dipole–Monitoring Military Satellites–SAR Search And Rescue–Personal Communications Service–State Highway Maintenance With State Frequencies

1995 Volume Eight

❒ Jan–AOR AR 8000 Pre–Review–Antennas for todays scanners–1995 Police Call–The National Scanner Source Book–Weather Satellites–Phoenix Air–Public Safety; Fire Deptartments–Railroad frequencies for the entire USA–Finding hidden frequencies–Aviation; The Hawaiian Islands frequencies–P/R JIM M–75 Pre–Amp–FCC News; 1.6MHz Mobile Satellite Service
❒ Feb–P/R AOR AR8000–Space communications and you–Annual guide to Air Shows with frequencies–Cell phones and OJ–Nellis Air Force Base home of the ASAF Thunderbirds–Broadband Wideband and Multiband Antennas–Aviation; Alaska aviation frequencies–Tune In logging program–National car racing frequencies–P/R Opto Electronics Scout Model 25–FCC News; 911 compatability
❒ Mar–P/R Radio Map–Space research frequencies–Phase inversion explained–P/R Ramsey scrambler/descrambler–Antennas, the yagi beam–Offutt Air Force Base–800MHz public safety frequencies Alaska through Massachusets–Opto model 25 scout revisited–Microwave mobile band
❒ Apr–USSN BBS Online Computer System–Aviation, Norfolk VA–UHF Satellite terminal system–Antennas for weak signals–P/R Startek ATH-10 counter–800MHz public safety frequencies Maryland to Wyoming–Much More
❒ May–900MHz Cordless phone–P/R Percon Spectrum Data base–Vehicle Tracking–Aviation, Florida Keys to Virgin Islands–136-174MHz Satellites–Scanner Antennas–Finding frequen cies–February FCC public safety updates–FCC News
❒ Jun–Trunking Technology–Amateur Tranceivers Out Of Band Operation–Aviation Atlanta GA Frequs–Shuttle Flight Profile–Direction Finding for Scanners–March FCC Updates–Call Boxes–Profile Gene Hughs
❒ Jul–Cubical Quad Antenna–US Customs Service–How to Monitor 800MHz Trunking Services–Aviation NE Ohio NW Pennsylvania–Purchasing a Scanner–P/R AOR 2700–April FCC Updates–P/R Icom R7100–Special Emergency Radio Servive
❒ Aug–US Immigrtation Service–Newly Available Frequency Allocations–Spreadsheet Pgms for Frequencies–FCC Call Signs–Railroad Frequs–Transportation E Central Minnesota NW Wisconsin–Jim 51 PreAmp–Emergency Medical Radio Service–May FCC Updates–Blue Angels Airshow Update

Complete Volumes

Volume 1, 11 issues ---- $20.95
Volume 2, 12 issues ---- $23.95
Volume 3, 12 issues ---- $23.95
Volume 4, 12 issues ---- $23.95
Volume 5, 8 issues ------ $17.95
Volume 6, 2 issues ------ $4.95
Volume 7, 4 issues ------ $9.95
Volume 8, 8 issues ----- $17.95
All Eight Volumes ------ $129.95

All Prices Include 4th Class Shipping. For Priority mail add $3.00.
Send Name address and check or money order to:
US Scanner Publications,
PO Box 14923, Portland, OR 97214
Or Call 1–800–890–6999 with a credit card

DID YOU ENJOY U.S. SCANNER NEWS? SUBSCRIBE NOW

The *ONLY* national monthly magazine devoted entirely to the hobby of VHF-UHF monitoring. *NO* Shortwave Broadcast, *NO* Broadcast!!

THE LATEST NEWS ON SCANNING

Each Month You Get:

- ➤Outstanding Feature Articles
- ➤In-depth, unbiased reviews
- ➤Accurate frequency information
- ➤The latest FCC actions
- ➤Helpful scanning and technical hints
- ➤Plus regular monthly columns

FINALLY A MAGAZINE FOR SCANNER HOBBYISTS

1-800-890-6999

Call Now With Your Credit Card Or Send a Check or Money Order To:

U.S. Scanner Publications
PO Box 14923
Portland, OR 97214-4923

- ❑ One Year for only $20.00. (Other Countries $34.00 US funds)
- ❑ Two Years for only $35.00. (Other Countries $64.00 US funds)
- ❑ Three Years for only $49.00. (Other Countries $92.00 US funds)
- ❑ Sample Copy $3.00 1ST Class. (Other Countries $5.00 US funds)

Name _____

Address _____

City, State, Zip _____

MC/Visa/Discover # _____ Expires _____

You Won't Miss a Thing With SCOUT™ Reaction Tune

*Scanner not included

The SCOUT™ Has Taken Tuning Your Receiver To a New Dimension

Featuring Automatic Tuning of your AR8000 and AR2700 with the Optoelectronics Exclusive, Reaction Tune (Pat.Pend). Any frequency captured by the Scout will instantly tune the receiver. Imagine the possibilities! End the frustration of seeing two-way communications without being able to pick up the frequency on your portable scanner. Attach the Scout and AR8000/2700 to your belt and capture up to 400 frequencies and 255 hits per frequency. Or mount the Scout and AR8000/2700 in your car and cruise your way into the future of scanning. A simple interface cable will connect you to a whole new dimension of scanning.

The Scout's unique Memory Tune (Pat.Pend.) feature allows you to capture frequencies, log into memory and tune your AR8000/2700 at a later time. A distinctive double beep will inform you when the Scout has captured a new frequency, while a single beep indicates a frequency that has already been recorded. For discreet monitoring, a pager style vibrator will inform you of any hits the Scout captures.

The Scout will also Reaction Tune and Memory Tune Icom CI-V receivers: (R7000, R7100, and R9000) and (Pro 2005/6 equipped with OS456, Pro 2035 equipped with OS535). Download the Scout frequencies to a PC with the Scout Utility Disk and CX-12AR (optional), then compare them to the Spectum CD-ROM/PerCon FCC Database (optional).

Act Now!! Let the Scout Reaction Tune you into The World of Scanning

SCOUT™ $449

Features

- Automatically tunes these receivers with Reaction Tune (Pat.Pend.) CI-V receivers (ICOM's R7000, R7100, and R9000), (Pro 2005/2006 equipped with OS456, Pro 2035 equipped with OS535) or AOR models (AR2700 and AR8000).
- Records and saves 400 unique frequencies
- Records 255 hits on each frequency in memory
- Digital Filter and AutoCapture (Pat.Pend.)
- 10MHz-1.4GHz single frequency range
- View frequencies in RECALL mode
- 10 digit LCD with EL Backlight
- 16 Segment RF signal strength bargraph
- CX-12AR Computer Interface (optional)
- PC Utility Disk for downloading memory to PC
- Rapid charge NiCads with 10 hour discharge time
- Scout Spectrum CD-ROM/PerCon FCC database (optional)
- AC Adaptor/Charger
- DB 32 VHF/UHF mini-antenna shown with Scout (optional)
- Distinctive Beeper/Vibrator indicate frequency hits

At right: Scout shown with CLIPMATE™. A handy windshield mount for Scout, for quick access and visibility.

CLIPMATE™ $25.00

OPTOELECTRONICS®

ORDER LINE
800•327•5912
Tel:305/ 771-2050
Fax:305/ 771-2052

5821 NE 14th Avenue • Ft. Lauderdale, FL 33334

Contact Factory for shipping prices. Visa, Master Card, & C.O.D.(cash or money order only)

All prices and specifications are subject to change without notice or obligation

MADE IN THE U.S.A.